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ARMY MEDICAL DEPARTMENT

REPORT

FOR THE YEAR 1880.

VOLUME XXII.

LONDON:
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TO THE RIGHT HONOURABLE

THE SECRETARY OF STATE FOR WAR.

SIR,

IN accordance with instructions laid down for the conduct of business by the Director-General and Heads of Branches of the Army Medical Department, I have the honour to submit the accompanying Report on the Health of the Army in 1880, and on various matters connected with the duties of the Officers of the Department.

The Statistical, Sanitary, and Medical Reports have been drawn up by the Officers in charge of the respective Branches.

I have the honour to be,
SIR,
Your most obedient
Humble Servant,
T. CRAWFORD,
Director-General.

ARMY MEDICAL DEPARTMENT,
1882.

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ARMY MEDICAL DEPARTMENT REPORT FOR 1880.

STATISTICAL REPORT.

Troops at Home and Abroad.

THE average annual strength of the troops serving at home and abroad in 1880, as computed from the returns received by the Army Medical Department, was 159,622 non-commissioned officers and men (exclusive of the Royal Malta Fencible Artillery, the 1st and 2nd West India Regiments, and the Gun Lascars at Ceylon, and at Hong Kong, Corps which are not recruited at home); the admissions into hospital in this force were 184,635, and the deaths 2,182. The rates represented by these numbers are for admissions into hospital 1156·7, and for deaths 13·34 per 1,000 of the average annual strength, the latter being calculated on a strength of 163,570, which includes detached men.

The statistics of some of the most important of the results of sickness, in every Command in which the troops were stationed, are exhibited in the following Table:—

1880.

White Troops.	Average Annual Strength.	Admitted into Hospital.	Died.	Sent Home as Invalids.	Discharged as Invalids.	Constantly non-effective from Sickness.
Troops at Home and Abroad	**159,622**	**184,635**	**2,182**	**2,296**	**3,533**	**8471·35**
United Kingdom	83,895	75,173	600	—	1,978	3866·97
Gibraltar	4,483	3,309	19	156	82	196·84
Malta	4,885	4,187	49	88	58	227·45
Cyprus	443	444	1	8	6	23·60
Canada	1,670	1,434	11	60	37	77·96
Bermuda	1,974	1,374	19	59	22	79·25
West Indies	1,037	952	9	44	13	44·47
Cape of Good Hope and St. Helena	5,552	4,425	179	262	223	298·36
Mauritius	353	778	2	28	5	34·78
Ceylon	1,000	1,238	25	58	12	64·24
China and Straits Settlements	1,781	1,743	15	35	24	81·84
India	50,136	87,616	1,236	1,498	1,073	3475·59
On board Ship	2,413	1,962	17	—	—	—

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Troops at Home and Abroad.

1880.

White Troops.	Ratio per 1,000 of Strength. Admitted.	Died.	Sent Home as Invalids.	Discharged as Invalids.	Constantly non-effective from Sickness.	Average sick-time to each Soldier.	Average duration of each case of Sickness.
	*	†	‡	§	‖	Days.‖	Days.‖
Troops at Home and Abroad	**1156·7**	**13·24**	**31·32**	**21·92**	**53·89**	**19·72**	**16·97**
United Kingdom	896·0	6·83	—	22·52	46·09	16·87	18·83
Gibraltar	738·1	4·24	34·80	18·29	43·91	16·07	21·77
Malta	857·1	10·02	18·01	11·87	46·56	17·04	19·88
Cyprus	1002·2	2·26	18·07	13·55	53·27	19·50	19·45
Canada	858·7	6·59	35·93	22·16	46·68	17·08	19·90
Bermuda	696·0	9·62	29·89	11·15	40·15	14·69	21·11
West Indies	918·0	8·68	42·43	12·54	42·88	15·70	17·10
Cape of Good Hope and St. Helena	797·0	32·24	47·19	40·16	53·74	19·67	24·68
Mauritius	2203·9	5·67	79·32	14·17	98·53	36·06	16·36
Ceylon	1238·0	25·00	58·00	12·00	64·24	23·51	18·99
China and Straits Settlements	978·7	8·42	19·65	13·47	45·95	16·82	17·18
India	1747·6	24·65	29·88	21·40	69·32	25·37	14·52
On board Ship	813·1	7·05	—	—	—	—	—

* Calculated on strength, excluding men detached (3,948).
† Calculated on strength, including men detached.
‡ Calculated on strength, excluding United Kingdom, and troops on board ship.
§ Calculated on strength, including men detached, and excluding troops on board ship.
‖ Calculations exclude men detached and troops on board ship.

1870 to 1879.

White Troops.	Aggregate strength for 10 years.	Admissions into Hospital.	Deaths.	Sent Home as Invalids.	Discharged as Invalids.	Constantly non-effective from Sickness.
Troops at Home and Abroad	**1,700,334**	**1,742,790**	**22.251**	**31,704**	**38,397**	**77,297**
United Kingdom	885,861	716,916	7,712	—	25,612	34,998
Gibraltar	45,207	30,261	315	1,483	787	1,622
Malta	49,139	41,168	480	1,474	879	2,081
*Cyprus	1,554	4,901	50	160	58	234
Canada	20,470	13,306	145	414	281	578
Bermuda	18,974	12,088	170	388	248	619
West Indies	11,833	10,591	130	237	142	489
Cape of Good Hope and St. Helena	40,187	37,314	1,57	1,974	603	1,922
Mauritius	4,516	7,688	8.	158	62	227
Ceylon	9,931	9,752	148	348	154	495
China and Straits Settlements	18,037	22,495	255	809	379	925
India	571,651	823,966	11,003	24,259	9,192	33,107
On board Ship	22,974	12,344	190	—	—	—

* For two years only.

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Troops at Home and Abroad.

1870 to 1879.

White Troops.	Ratio per 1,000 of Strength.					Average sick-time to each Soldier.	Average duration of each case of Sickness.
	Admitted.	Died.	Sent Home as Invalids.	Discharged as Invalids.	Constantly non-effective from Sickness.		
						Days.	Days.
Troops at Home and Abroad	**1025·0**	**12·67**	**40·06**	**22·15**	**46·08**	**16·82**	**16·30**
United Kingdom -	809·1	8·18	—	27·18	39·51	14·42	17·82
Gibraltar - -	669·4	6·98	32·80	17·41	35·88	13·18	19·62
Malta - -	837·8	9·77	30·00	17·89	42·35	15·46	18·45
*Cyprus - -	3153·7	32·18	102·96	37·32	150·58	54·96	17·43
Canada - -	650·0	7·08	20·22	13·73	28·24	10·31	15·86
Bermuda - -	637·1	8·96	20·45	13·07	32·62	11·91	18·69
West Indies - -	895·0	10·99	20·03	12·00	41·32	15·08	16·85
Cape of Good Hope and St. Helena -	928·5	39·12	49·12	15·00	47·83	17·46	18·80
Mauritius - -	1702·3	17·94	34·99	13·73	50·26	18·35	10·78
Ceylon - -	982·0	14·90	35·04	15·51	49·84	18·19	18·53
China and Straits Settlements -	1247·1	14·14	44·85	21·01	51·28	18·72	15·01
India - - -	1441·4	19·25	42·44	16·08	57·91	21·14	14·67
On board Ship -	537·3	8·27	—	—	—	—	—

* For two years only.

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II.—ON THE HEALTH OF THE TROOPS SERVING IN THE UNITED KINGDOM.

Sickness and Mortality.

STATISTICAL REPORT.

United Kingdom.

The average annual strength of the non-commissioned officers and men serving in the United Kingdom during the year, calculated from the returns received from the Medical Officers, was 83,895; the admissions into hospital were 75,173; the deaths were 600, including 57 among men detached from their corps, the average number of whom is given in the Adjutant-General's return as 3,948. The number of invalids discharged the service was 1,978.

The daily average number of men non-effective from sickness was 3866·97. The average sick time to each soldier was 16·87 days, and the average duration of each case of sickness was 18·83 days.

As compared with the corresponding rates for the previous year, the admission rate 896·0 per 1,000 is higher by 73·9; the death rate 6·83 is lower by ·72; the rate of final discharge as invalids 22·52 is lower by 3·71 per 1,000; the proportion of constantly sick is higher by 4·06; the average sick time to each soldier is longer by 1·53 days, and the average duration of each case of sickness is longer by ·17.

As compared with the average for the ten years 1870–79, the admission rate is higher by 86·9; the death rate is lower by 1·35; the finally discharged as invalids rate is lower by 4·66 per 1,000; the proportion constantly sick is higher by ·01; the average sick time to each soldier is longer by 2·45 days, and the average duration of each case of sickness by 1·01.

The death rate among men absent from their corps was 14·44 per 1,000, which is lower than the corresponding rate for the previous year by 8·39 per 1,000.

The classes and orders of diseases to which the admissions, deaths, and other results were due are shown in Abstract No. 1.

General Diseases.—The total numbers were of admissions 19,125, deaths 220, invalids finally discharged 562. The annual rates per 1,000 under each heading are of admissions 227·9, deaths 2·51, and finally discharged as invalids 6·40. As compared with the corresponding rates for the previous year, the admission rate is higher by 32·1 per 1,000, the death rate is lower by ·90, and the finally discharged as invalids rate is lower by ·57 per 1,000.

Febrile Group.—The admissions were 4,071, deaths 33, discharged finally as invalids 5. The annual rates per 1,000 under each heading are, of admissions 48·5, deaths ·38, and finally discharged ·06. As compared with the corresponding rates for the previous year, the admission rate is lower by 1·3 and the death rate lower by ·01 per 1,000, the finally discharged as invalids rate is higher by ·01 per 1,000.

Eruptive Fevers caused 487 admissions and 5 deaths, giving the annual rates of 5·8 and ·06 per 1,000 respectively; compared with the corresponding rates for the previous year the former is higher by ·9 and the latter by ·02 per 1,000. The cases were small-pox 3—one at Winchester, Dublin, and Birr respectively—chicken-pox 5, measles 218, chiefly in the Aldershot, Southern, Home, Western and Cork Districts, scarlet fever 110, chiefly in the Aldershot, Dublin, Woolwich, Eastern and Southern Districts, cow-pox 151. The deaths were all from scarlet fever, namely, 2 in the Aldershot, 1 respectively in the Home, North British, and Cork Districts.

Continued Fevers caused 1,402 admissions and 23 deaths, giving the annual rates of 16·7 and ·26, which exceed the corresponding rates for the previous year by ·8 and ·02 per 1,000 respectively. The cases were, typhus fever 4, namely, 1 respectively at Pontefract, Cork, Mullingar, and Sligo, enteric fever 94, simple continued fever 235, febricula 1,068, and cerebro-spinal fever 1; the deaths were from typhus fever 3, viz., 1 at Pontefract, 1 in Cork, and 1 in Mullingar, enteric fever 18, and from simple continued fever 2.

The cases and deaths from enteric fever were distributed as follows; in the

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Northern District 7 cases and 1 death, at Leeds two, and at Fleetwood, Hulme, Newcastle, Pontefract, and Warrington, one respectively; the death occurred at Birmingham in the person of a patient "remaining" from the previous year. In the *Eastern* 4 cases and 1 death, one respectively at Bury St. Edmunds, Colchester, Ipswich, and Shoeburyness; the case at Colchester terminated fatally. In the *Western* 1 case at Fort Hubberstone. In the *Southern* 5 cases, three at Portsmouth, one at Gosport, one at Devizes. In the *Chatham District* 3 cases and 1 death, two at Chatham and one at Sheerness; the death occurred at Sheerness. In the *South Eastern District* 4 cases and 1 death, two at Shorncliffe, one at Hythe, one at Brighton, the last named in the person of a man "detached" from his regiment terminated fatally. In the *Home District* 10 cases and 2 deaths, four in the Household Cavalry with one death, and six in the Foot Guards with one death. In the *Woolwich District* no case occurred. In the *Aldershot District* 8 cases. In the *Channel Islands* 4 cases, two at Guernsey and two at Jersey. In the *North British District* 1 case and 1 death at Leith Fort. In the *Belfast District* 4 cases and 1 death, at Londonderry two, of which one was fatal, at Armagh one, and at Dundalk one. In the *Dublin District* 15 cases and 3 deaths, twelve with two deaths in Dublin, and one case respectively at the Curragh, Ballinrobe, and Birr; the case at Ballinrobe proved fatal. In the *Cork District* 28 cases and 7 deaths, eighteen cases and three deaths at Buttevant, five cases and four deaths at Tipperary, two cases at Tralee, and one case respectively at Cork, Fermoy, and Listowel. *United Kingdom.*

The proportion of cases per 1,000 of strength 1·12 is lower than that for the previous year by ·21, of deaths ·21 is identical with that for the previous year, and of deaths to cases 191·49 exceeds that for the previous year by 23·27.

Paroxysmal Fevers caused 1,497 admissions and no deaths, giving the annual rates per 1,000 of 17·9 and *nil* respectively, the former exceeds by ·7, and the latter is identical with the result for the previous year. The cases were ague 1,490 and remittent fever 7. Three cases were returned as simple cholera. Under "Other Diseases" occurred 682 admissions and 5 deaths, causing the rates per 1,000 of 8·1 and ·06, which are lower than the corresponding rates for the previous year by 3·7 and ·01 per 1,000 respectively. The cases recorded under this heading were influenza 370, erysipelas 216, pyæmia 3, mumps 86, diphtheria 3, sloughing phagedæma 2, and whooping cough 2; the deaths were from erysipelas 2, and pyæmia 3.

Constitutional Group.—The admissions were 15,054, deaths 187, invalids discharged the service 557. The annual rates per 1,000 under each heading are, of admissions 179·4, deaths 2·13, invalids finally discharged 6·34. As compared with the corresponding rates for the previous year, the admission rate is higher by 33·4, the death rate lower by ·89, and the finally discharged as invalids rate lower by ·58 per 1,000.

Rheumatism caused 3,368 admissions and 4 deaths, giving the annual rates of 40·1 and ·05, which are lower than the corresponding rates for the previous year by ·5 and ·07 per 1,000 respectively. *Primary Syphilis* caused 8,036 admissions and no deaths, giving the annual admission rate of 95·8, which exceeds the rate for the previous year by 32·4 per 1,000. During the previous year also no death occurred under this heading. *Secondary Syphilis* caused 2,556 admissions and 2 deaths, giving the annual admission rate of 30·5 and death rate of ·02; compared with the corresponding rates for the previous year, the former is higher by 1·5, and the latter lower by ·02 per 1,000. *Tubercular Diseases* caused 937 admissions and 174 deaths, giving the annual rates of 11·1 and 1·98, which are lower than the corresponding rates for the previous year by ·1 and ·80 per 1,000 respectively. Under *Scurvy and Purpura* occurred 23 admissions and no death; the admission rate ·3 is higher by ·1 than that for the previous year, during which also no death occurred. Under "*Other Diseases*" are recorded 134 admissions and 7 deaths, causing the annual rates per 1,000 of 1·6 and ·08, which exactly coincide with the corresponding rates for the previous year. The cases were anæmia 112, general dropsy 5, cancer 5, lupus 5, tumours of doubtful character 2, and diabetes 5. The deaths were from cancer 5 and diabetes 2.

Local Diseases.—*Diseases of the Nervous System* caused 1,100 admissions and 43 deaths, giving the respective annual rates of 13·1 and ·49 per 1,000, compared with the corresponding rates for the previous year the former is higher by 1·3 and the latter higher by ·10 per 1,000. *Diseases of the Eye*

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caused 1,246 admissions, *of the Ear* 431, and *of the Nose* 52; the respective annual admission rates are 14·9, 5·1, and ·6 per 1,000; the rates for diseases of the eye and nose are fractionally higher, and for those of the ear fractionally lower than the rates for the previous year. *Diseases of the Circulatory System* caused 1,370 admissions and 81 deaths, giving the annual admission rate of 16·3 and death rate of ·92, which exceed the corresponding rates for the previous year by 3·2 and ·28 per 1,000 respectively. *Diseases of the Absorbent System* caused 1,018 admissions and no death, the annual admission rate 12·1 is lower by 3·0 per 1,000 than that for the previous year, during which also no death occurred. *Diseases of the Respiratory System* caused 6,348 admissions and 120 deaths; the annual admission rate 75·7, and death rate 1·37, are lower than the corresponding rates for the previous year by 21·2 and ·25 per 1,000 respectively. *Diseases of the Digestive System* caused 9,098 admissions and 45 deaths; the annual admission rate 108·5, and death rate ·51, exceed the corresponding rates for the previous year by 6·2 and ·08 per 1,000 respectively. *Diseases of the Urinary System, Gonorrhœa* caused 8,930 admissions, and its *sequelæ* 1,101; the annual admission rate under each head 106·5 and 13·1 is higher than the corresponding rate for the previous year by 30·2 and 2·3 per 1,000 respectively. No death occurred during either year. Under *Other Diseases* occurred 1,047 admissions and 19 deaths, giving the annual rates of 12·5 and ·21, which exceed the corresponding rates for the previous year by 2·3 and ·02 per 1,000 respectively.

Diseases of the Generative System caused 875 admissions and no death; the admission rate 10·4 per 1,000 is lower by ·8 than that for the previous year, during which also no death occurred.

Diseases of the Organs of Locomotion caused 568 admissions and 4 deaths; the annual admission rate 6·8, exceeds the rate for the previous year by 1·0 per 1,000, and the annual death rate ·05 is identical with that for the previous year. *Diseases of the Cellular Tissue* caused 1,989 admissions and no death; the annual admission rate 23·7, exceeds that for the previous year by 1·3, while the death rate *nil* contrasts with ·05 per 1,000 for the previous year. *Diseases of the Cutaneous System* caused 10,309 admissions and no death; the annual admission rate 122·9, exceeds by 11·9 per 1,000 the rate for the previous year, during which also no death occurred.

Conditions.—Under *Debility* occurred 926 admissions and no death; the annual admission rate, 11·0, is lower by ·7 per 1,000 than the rate for the previous year, during which also no death occurred.

Poisons.—From this cause occurred 178 admissions and 6 deaths, giving the annual admission rate 2·1 and death rate ·07; the former is higher than the rate for the previous year by ·3, and the latter is lower by ·5 per 1,000. The cases were *delirium tremens* 96, *alcoholic poisoning* 73, with *suicidal* intent by opium 3, oxalic acid 4, acetate of lead 1, and accidental by oxalic acid 1. The deaths were from *delirium tremens* 1, alcoholic poisoning 1, *suicidal* by opium 1, oxalic acid 1, cyanide of potassium 2 out of hospital.

Injuries.—Under *general injuries* occurred 11 admissions and 25 deaths; the annual admission rate ·1 per 1,000 is identical with that for the previous year, while the annual death rate, ·28, is lower by ·10 per 1,000. *Local injuries* caused 9,192 admissions and 32 deaths; the annual admission rate 109·6, and death rate ·36, are higher than the corresponding rates for the previous year by 7·1 and ·12 per 1,000 respectively. The combined annual admission rate, 109·7, and death rate, ·64, exceed the corresponding rates for the previous year by 7·1 and ·02 per 1,000 respectively.

Injuries *self-inflicted with suicidal intent* caused 17 admissions and 15 deaths, viz., under *general injuries* two admissions (one from multiple injury caused by jumping out of window and one from privation), and under *local* injuries 15 admissions (eight from cut-throat, five from gun-shot, one from fracture of skull, with depression, and one from wound not specified). The deaths from *general injuries* were 3 (multiple injury two, viz., one from falling before a railway train, one from jumping out of window, and one from asphyxia by hanging). The deaths from *local injuries* were 12 (seven from gun-shot, four from cut-throat, and one from fracture of skull, with depression).

The total number of deaths from *suicide* was 19, being at the annual rate of ·21 per 1,000.

Of *homicidal injuries* 4 cases occurred, one in the person of a soldier at

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Brighton, wounded with small shot by a farmer on whose ground he had trespassed, the man recovered; two young soldiers at Athlone suffered from wounds of the throat inflicted on two different nights, with a razor, by another soldier, both recovered, but one was invalided; a soldier at Londonderry sustained superficial gun-shot wound of chest, inflicted by a civilian, who fired four shots at him. *United Kingdom.*

From asphyxia by drowning, 15 deaths occurred, chiefly through bathing or boat accidents, viz., in the Northern District 1, Eastern 1, Southern 1, South Eastern 4, Home 2, North British 2, Dublin 2, and Cork 2.

Surgical Operations, 5 are recorded, viz., amputation of thigh one in consequence of inflammation and disorganization of knee joint, the result of kneeling on a sharp stone while at drill, amputation of arm one in consequence of gun-shot wound at drill, amputation of arm after fracture one and extirpation of eye after injury two. The cases all terminated favourably.

The deaths of men absent from their corps were caused by continued fever 1, rheumatism 1, secondary syphilis 1, tubercular diseases 21, other constitutional diseases 2, diseases of the Nervous System 5, Circulatory 4, Respiratory 11, Digestive 3, General Injuries 2, Local Injuries 2, and unknown 4.

The admissions, deaths, and average number constantly sick in the various Military Districts are shown in the following Table :—

Military Districts.	Average Annual Strength.	Admitted into Hospital.	Died.	Average Number constantly Sick.	Ratio per 1,000 of Mean Strength.			Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
					Admitted.	Died.	Constantly Sick.		
1. Northern -	8,564	8,232	71	399·55	961·2	8·29	46·66	17·07	17·76
2. Eastern - -	4,370	3,981	35	194·62	911·0	8·00	44·53	16·30	17·89
3. Western - -	4,829	3,928	26	210·37	813·4	5·39	43·56	15·94	19·60
4. Southern - -	7,676	6,986	44	373·28	910·1	5·73	48·63	17·80	19·56
5. Chatham - -	4,031	3,310	17	172·83	821·1	4·22	42·87	15·69	19·11
6. South-eastern -	6,857	6,327	39	318·53	922·7	5·69	46·45	17·00	18·43
7. Home - -	7,459	7,396	61	367·41	991·5	8·18	49·25	18·03	18·18
8. Woolwich -	5,402	4,509	39	250·78	834·7	7·22	46·42	16·99	20·36
9. Aldershot -	11,068	9,834	54	552·34	888·5	4·87	49·90	18·26	20·56
10. North British -	3,433	3,155	37	139·53	919·0	10·77	40·64	14·88	16·19
11. Channel Islands	1,343	1,295	6	64·08	964·2	4·46	47·71	17·46	18·11
12. Belfast - -	2,202	2,171	14	92·49	985·9	6·35	42·00	15·37	15·59
13. Dublin - -	10,860	9,066	55	509·53	834·8	5·06	46·96	17·17	20·57
14. Cork - -	5,801	4,983	45	221·63	858·9	7·75	38·20	13·98	16·28
Detached from the Corps.	3,948	—	57	—	—	14·44	—	—	—
Total - -	87,843	75,173	600	3866·97	896·0	6·83	46·09	16·87	18·83
„ 1870–79	—	—	—	—	809·1	8·18	39·51	14·42	17·82

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The highest admission rate 991·5 per 1,000 occurred in the *Home District*, and the lowest admission rate 813·4 per 1,000 occurred in the *Western District*.

The highest death rate, 10·77 per 1,000 occurred in the *North British District*, and the lowest death rate, 4·22 per 1,000, occurred in the *Chatham District*.

The highest rate of constantly sick 49·90 per 1,000 occurred in the *Aldershot District*, and the lowest 38·20 per 1,000 in the *Cork District*.

As compared with the results for the previous year the admission rate per 1,000 is higher in the *Northern District* by 81·3, *Eastern* 89·2, *Western* 105·0, *Southern* 20·1, *South-Eastern* 125·1, *Home* 106·04, *Woolwich* 87·4, *Aldershot* 177·4, *North British* 114·9, *Dublin* 31·1, and *Cork* 19·5; and lower in the *Chatham District* by 71·7, *Channel Islands* 172·5, and *Belfast* 1·9.

The death rate per 1,000 is lower in the *Northern District* by 1·84, *Eastern* 2·31, *Western* 1·82, *Southern* 1·11, *Chatham* ·86, *Aldershot* ·98, *Channel Islands* ·82, *Belfast* ·20, and *Dublin* ·08, and higher in the *South Eastern District* by ·01, *Home* 1·06, *Woolwich* 1·11, *North British* 1·17, and *Cork* 1·40.

The proportion per 1,000 of men constantly sick is higher in the *Northern District* by 5·16, *Eastern* 1·02, *Western* 4·58, *South Eastern* 4·74, *Home* 2·37, *Woolwich* 6·38. *Aldershot* 12·36, *Channel Islands* 2·19, *Belfast* 1·49, *Dublin* 4·23, and *Cork* 1·26, and lower in the *Southern District* by ·39, *Chatham* 3·25, and in the *North British* by ·46.

The average sick time to each soldier varies from 18·26 days in the *Aldershot District* to 13·98, in the *Cork District*. The average duration of each case of sickness varies from 20·57 days in the *Dublin District* and 20·56, in the *Aldershot*, to 15·59 in the *Belfast District*.

The results of sickness in the four permanent Camps (which are included in the first Table) are separately grouped in the following:—

—	Average Annual Strength.	Admitted into Hospital.	Died.	Average Number constantly Sick.	Ratio per 1,000 of Mean Strength.			Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
					Admitted.	Died.	Constantly Sick.		
Camps -	18,047	16,902	99	922·93	892·0	5·25	48·71	Days. 17·83	Days. 19·98

As compared with the results for the previous year the admission rate is higher by 126·9, the death rate lower by 1·44, and the constantly sick rate is higher by 8·90 per 1,000. The average sick time to each soldier is longer by 3·30 days, and the average duration of each case of sickness in days is longer by ·99.

The classes and orders of diseases to which the admissions, deaths, and other results were due are shown by *Districts* in Abstracts lettered from A to N.

General Diseases.—As compared with the results for the previous year the annual admission rate per 1,000 in the *Northern District* 239·5 is higher by 31·0; in the *Eastern* 214·2 is higher by 5·2; in the *Western* 182·4 is higher by 38·6; in the *Southern* 197·4 is higher by 14·5; in the *South Eastern* 251·5 is higher by 62·2; in the *Home* 313·2 is higher by 65·5; in the *Woolwich* 292·3 is higher by 21·3; in the *Aldershot* 193·3 is higher by 34·9; in the *North British* 195·7 is higher by 10·6; in the *Channel Islands* 244·2 is higher by 25·9; in the *Belfast* 268·3 is higher by 25·4; in the *Dublin* 240·2 is higher by 47·5; and in the *Cork* 193·0 is higher by 14·9. In the *Chatham District* the annual admission rate, 158·7, is lower than that for the previous year by 19·3 per 1,000.

The death rate in the *Northern District*, 3·04 is lower by ·71; in the *Eastern* 2·52 lower by 1·60; in the *Western* 1·03 lower by 2·47; in the *Southern* 2·08 lower by 1·54; in the *Chatham* 1·24 lower by 1·42; in the *South Eastern* 1·31 lower by ·87; in the *Home* 3·89 lower by ·10, in the *Aldershot* 1·53 lower by ·97; in the *Channel Islands* 2·22 lower by 1·56 and in the *Dublin* 1·66 lower by 1·19. In the *Woolwich District* 2·59 is higher by ·18; in the *North British* 3·49 higher by 1·39; in *Belfast* 3·18 higher by ·84; and in the *Cork* 3·79 higher by 1·02.

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Febrile Group.—As compared with the previous year the admission rate of the *Southern District* 49·5 is lower by 13·3; of the *Chatham* 18·8 lower by 1·0; of the *Woolwich* 84·6 lower by 37·2; of the *Aldershot* 37·6 lower by ·3; of the *Channel Islands* 33·7 lower by 5·9; of the *Belfast* 34·9 lower by 24·5; of the *Dublin* 25·8 lower by 5·1; and of the *Cork* 52·0 lower by 20·6. The admission rate of the *Northern District* 41·9 is higher by 8·6; of the *Eastern* 65·9 is higher by 6·4; of the *Western* 41·8 is higher by 5·3; of the *South-Eastern* 95·5 is higher by 36·9; of the *Home* 40·8 is higher by 11·9; and of the *North British* 47·2 is higher by 2·5. The death rate of the Western District *nil* contrasts with ·82 for the previous year; of the Southern *nil* contrasts with ·40; of the *South Eastern, nil* contrasts with ·29; of the *Aldershot* ·18 is lower by ·18; and of the *Belfast* ·45 is lower by ·95; the death rate of the *Northern District* ·35 is higher by ·23; of the *Eastern*, ·46 contrasts with *nil* for the previous year; of the *Chatham* ·25 contrasts with *nil* for the previous year; of the *Home* ·80 is higher by ·37; of the *North British* ·58 contrasts with *nil* for the previous year; of the *Dublin* ·37 is higher by ·26; and of the *Cork* 1·72 is higher by ·74; of the *Woolwich District* ·19 is identical with that for the previous year; in the *Channel Islands* the death rate for each year was *nil*. *United Kingdom.*

As compared with results for the previous year in the *Southern District* the admission rate from "paroxysmal fevers" 17·6 is lower by 24·4 per 1,000; while that from "continued fevers" 17·1 is higher by 5·3; from "eruptive fevers" 7·4 higher by 3·5; from "other diseases" 7·2 higher by 2·1; and from cholera ·2 contrasts with *nil* for the previous year. In the *Chatham District* the admission rate from "paroxysmal fevers" 4·4 is lower than that for the previous year by 6·5 per 1,000, while that from "continued fevers" 7·7 is higher by 2·6; from "eruptive fevers" 2·7 higher by 1·5; and from "other diseases" 4·0 higher by 1·4. In the *Woolwich District* the admission rate from "paroxysmal fevers" 23·9 is identical with that for the previous year; under "other diseases" the admission rate 42·8 is lower by 42·4; from "eruptive fevers" the admission rate 4·0 is lower by 4·1, while that from "continued fevers" 13·9 is higher by 9·3. In the *Aldershot District* the admission rate from "continued fevers" 18·1 is lower by 3·8, and that from "paroxysmal fevers" 4·9 is lower by 2·0, while the rate from "other diseases" 6·8 is higher by 3·9, and from "eruptive fevers" 7·8 is higher by 1·6. In the *Channel Islands* the admission rate from "continued fevers" 26·8 is lower by 12·5, while that from "paroxysmal fevers" 8·2 is higher by 3·7; that from "other diseases" 2·2 contrasts with *nil*; and from "eruptive fevers," 1·5 is higher by ·7. In the *Belfast District* the admission rate from "other diseases" 9·5 is lower by 10·2; from "paroxysmal fevers" 6·3 lower by 8·2; from "continued fevers" 17·7 lower by 3·8; and from "eruptive fevers" 1·4 is lower by 2·3. In the *Dublin District* the admission rate from "continued fevers" 14·7 is lower by 4·8; that from "eruptive fevers" 3·1 lower by ·8; and that from "other diseases" 2·6 lower by ·1; while the rate from "paroxysmal fevers" 5·4 is higher by ·6. In the *Cork District* the admission rate from "other diseases" 2·9 is lower by 22·2; that from "paroxysmal fevers" 10·7 lower by 8·8; and that from "eruptive fevers" 4·8 lower by 1·1; while the rate from "continued fevers" 33·6 is higher by 11·5. The admission rate in the *Northern District* from "paroxysmal fevers" 18·2 is higher than that from the previous year by 7·3; from "other diseases," 8·4 higher by 1·9; from "eruptive fevers" 3·5, higher by 1·0; while that from "continued fevers" 11·8 is lower by 1·6. In the *Eastern District* the admission rate from "paroxysmal fevers" 39·1 is higher by 7·7; that from "eruptive fevers" 7·6 higher by 5·8.; and that from "other diseases" 4·8 higher by ·2, while that from "continued fevers" 14·4 is lower by 7·3. In the *Western District* the admission rate from "paroxysmal fevers" 18·0 is higher by 5·6; that from "other diseases" 6·4 higher by 3·3; that from "eruptive fevers" 8·5 higher by 2·9; while that from "continued fevers" 8·9 is lower by 6·5. In the *South-Eastern District* the admission rate from "paroxysmal fevers" 75·5 is higher by 42·3; while that from "other diseases" 1·9 is lower by 3·0; that from "continued fevers" 10·4 is lower by 1·7; and that from "eruptive fevers" 7·7 lower by ·7. In the *Home District* the admission rate from "continued fevers" 29·0 is higher by 11·6; that from "other diseases" 10·0 higher by 1·5; and that from "cholera"

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·1, contrasts with *nil*; while the admission rate from "eruptive fevers" 5·5 is lower by ·8; and that from "paroxysmal fevers" 4·2 lower by ·5. In the *North British District* the admission rate from "eruptive fevers" 13·1 is higher by 9·5; that from "continued fevers" 11·9 higher by 3·8; and that from "other diseases" 7·0 higher by 2·8; while that from "paroxysmal fevers" 15·2 is lower by 13·6.

The death rate in the *Western District, nil,* contrasts with ·82 from "continued fevers," during the previous year. In the *Southern, nil* contrasts with ·27 from "other diseases," and ·13 from "continued fevers." In the *South-Eastern, nil* contrasts with ·15 from "continued fevers," and ·15 from "other diseases." In the *Aldershot,* the death rate *nil* from "continued fevers" contrasts with ·36, while the death rate ·18 from "eruptive fevers" for the year under report contrasts with *nil* for the previous year. In the *Belfast District* the death rate *nil* from "eruptive fevers" contrasts with ·47 for the previous year, and ·45 from "continued fevers" is less than the rate for the previous year by ·49. In the *Northern District* the death rate from "continued fevers," ·23, exceeds that for the previous year by ·11, and that from "other diseases" ·12, contrasts with *nil* for the previous year. In the *Eastern District* the death rate ·23, from "continued fevers," and the same from "other diseases" contrasts with *nil* under each heading for the previous year. In the *Chatham* the death rate ·25 from "continued fevers" contrasts with *nil* for the previous year. In the *Home District* the death rate ·13 from "eruptive fevers" contrasts with *nil* for the previous year; ·40 from "continued fevers" exceeds that for the previous year by ·26; while that from "other diseases" ·27, is lower than that for the previous year by ·02. In the *North British* the death rate ·29 from "eruptive fevers" and the same from "continued fevers" contrast with *nil* under each heading for the previous year. In the *Dublin District* the death rate ·37 from "continued fevers" is higher than that for the previous year by ·26 .In the *Cork* the death rate from "continued fevers" 1·55, exceeds that for the previous year by ·90; while that from "eruptive fevers" ·17 is lower by ·16. In the *Woolwich* the death rate ·19, from "other diseases" is identical with that for the previous year.

Constitutional Group.—As compared with the results for the previous year the admission rate per 1,000 in the *Northern District,* 197·6, is higher by 22·4, in the *Western,* 140·6, higher by 33·3; in the *Southern,* 147·9, higher by 27·8; in the *South-Eastern,* 156·0, higher by 25·3; in the *Home,* 264·4, higher by 53·6; in the *Woolwich,* 207·7, higher by 58·5; in the *Aldershot,* 155·7, higher by 35·2; in the *North British,* 148·5, higher by 8·1; in the *Channel Islands,* 205·5, higher by 31·8; in the *Belfast,* 233·4, higher by 49·9; in the *Dublin,* 214·4, higher by 52·6; in the *Cork,* 141·0, higher by 35·5. The admission rate in the *Eastern District,* 148·3, is lower by 1·2; and in the *Chatham,* 139·9, is lower by 18·3. The death rate of the *Northern* District, 2·96, is lower than that for the previous year by ·67; in the *Eastern,* 2·06, is lower by 2·06; in the *Western,* 1·03, is lower by 1·65; in the *Southern,* 2·08, is lower by 1·14; in the *Chatham,* ·99, is lower by 1·67; in the *South-Eastern,* 1·31, is lower by ·58; in the *Home,* 3·09, is lower by ·47; in the *Aldershot,* 1·35, is lower by ·79; in the *Channel Islands,* 2·22, is lower by 1·56; and in the *Dublin,* 1·29, is lower by 1·45. The death rate of the *Woolwich District,* 2·40, is higher by ·18; of the *North British,* 2·91, higher by ·81; of the *Belfast,* 2·73, higher by 1·79; and of the Cork, 2·07, higher by ·28.

As compared with the results for the previous year, in the *Northern District* the admission rate from "primary syphilis" 109·9, is higher by 26·1, from "rheumatism" 39·0, higher by 1·2, and from "scurvy and purpura" ·1, contrasts with *nil* for the previous year; the admission rate from "secondary syphilis" 35·2, is lower by 3·0, from "tubercular diseases" 12·5, lower by 1·7, and from "other diseases" ·9, lower by ·3. In the *Western District* the admission rate from "primary syphilis" 61·3, is higher by 24·4, from "secondary syphilis" 28·8, higher by 8·2, from "scurvy and purpura" ·6, contrasts with *nil* for the previous year, from "other diseases" 1·4, higher by ·6, and from "tubercular diseases" 11·2, higher by ·5; the admission rate from "rheumatism," 37·3 is lower by 1·0. In the *Southern District,* the admission rate from "primary syphilis" 66·0 is higher by 35·2, from "secondary syphilis" 22·3, higher by 3·1, and from "tubercular diseases" 11·6, higher by ·3; the admission rate from "rheumatism" 46·1, is lower by 9·2; from

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"other diseases" 1·7, lower by 1·1, and from "scurvy and purpura" ·2, lower by ·5. In the *South Eastern District* the admission rate from "primary syphilis" 72·2, is higher by 21·4; from "tubercular diseases" 13·6, higher by ·9; and from "rheumatism" 44·6, higher by 9·4; the admission rate from "secondary syphilis" 21·6, is lower by 6·2; and from "other diseases" 3·9, lower by ·2; the rate from "scurvy and purpura" ·1, is identical with that for the previous year. In the *Home District*, the admission rate from "primary syphilis" 167·2, is higher by 50·1, and from "secondary syphilis" 41·2, higher by 5·6; the admission rate from "tubercular diseases" 11·3, is lower by 1·1, from "rheumatism" 43·0, lower by ·4, and from "scurvy and purpura" *nil*, contrasts with ·6 for the previous year; the admission rate from "other diseases" 1·7, is identical with that for the previous year. In the *Woolwich District*, the admission rate from "primary syphilis" 73·9, is higher by 30·0, from "secondary syphylis" 88·1, higher by 30·4, and from "other diseases" 3·7, by 1·1; the rate from "rheumatism" 32·9, is lower by 1·9, from "tubercular diseases" 8·9, lower by ·9, and from "scurvy and purpura" ·2, lower by ·2. In the *Aldershot District*, the admission rate from "rheumatism" 52·0, is higher by 14·5, from "primary syphilis" 74·4, by 18·0, from "tubercular diseases" 10·5, by 3·4, from "scurvy and purpura" ·4, by ·3, and from "other diseases" ·9 by ·5; the rate from "secondary syphilis" 17·5, is lower by 1·5. In the *North British District*, the admission rate from "rheumatism" 42·8, is higher by 6·8, from "primary syphilis" 56·2, by ·7, from "secondary syphilis" 35·2, by ·1, and from "tubercular diseases" 13·7, by ·5; the rate from "other diseases" ·6, is identical with that for the previous year. In the *Channel Islands*, the admission rate from "primary syphilis" 138·5, is higher by 48·6, from "other diseases" 10·4, by 6·6, and from "rheumatism" 35·7, by 1·7; the rate from "secondary syphilis" 14·2, is lower by 22·0, and from "tubercular diseases" 6·7, lower by 3·1. In the *Belfast District*, the admission rate from "primary syphilis" 155·4, is higher by 65·1, and from "secondary syphilis" 34·0, by 9·2; the rate from "rheumatism" 34·0, is lower by 17·0, and from "tubercular diseases" 9·5, by 7·4; the rate from "other diseases" ·5, is identical with that for the previous year. In the *Dublin District*, the admission rate from "primary syphilis" 147·8, is higher by 59·1; the rate from "rheumatism" 28·4, is lower by 4·0, from "secondary syphilis" 29·3, lower by 1·7, from "tubercular diseases" 8·1, by ·3, from "scurvy and purpura" ·3, by ·1, and from "other diseases" ·5, by ·4. In the *Cork District*, the admission rate from "primary syphilis" 75·4, is higher by 31·9, from "tubercular diseases" 13·6, by 3·8, from "rheumatism" 33·6, by 1·7, and from "scurvy and purpura" ·6, contrasts with *nil*; the rate from "secondary syphilis" 16·6, is lower by 2·1, and from "other diseases" 1·2, by ·4. In the *Eastern District*, the admission rate from "rheumatism" 38·2, is lower by 10·0, from "secondary syphilis" 23·8, by 4·5, from "other diseases" ·7, by 1·1, from "tubercular diseases" 13·3, by ·9, and from "scurvy and purpura" ·2, by ·1; the rate from "primary syphilis" 72·1, is higher by 15·4. In the *Chatham District*, the admission rate from "rheumatism" 44·7, is lower by 22·5, from "secondary syphilis" 21·4, by 3·8, and from "tubercular diseases" 10·9, by 3·6; the rate from "primary syphilis" 62·0, is higher by 11·4, and from "other diseases" ·7, by ·5; the rate from "scurvy and purpura" ·2, is identical with that for the previous year.

In the *Northern District*, the death rate from "tubercular diseases" 2·57, is lower by ·81, and from "rheumatism" *nil* contrasts with ·25, while from "secondary syphilis" ·12 contrasts with *nil* for the previous year. In the *Eastern* the death rate from "tubercular diseases" 1·83, is lower by 2·03, and from "other diseases" ·23, by ·03. In the *Western* the death rate from "tubercular diseases" ·62, is lower by 1·85, and from "secondary syphilis" *nil* contrasts with ·21, while from "other diseases" ·41 contrasts with *nil* for the previous year. In the *Southern*, the death rate from "tubercular diseases" 1·95, is lower by 1·14, and from "rheumatism" ·13, is identical with that for the previous year. In the *Chatham*, the death rate from "tubercular diseases" ·99, is lower by 1·67. In the *South Eastern* the death rate from "rheumatism" *nil* contrasts with ·15 for the previous year, and from "tubercular diseases" 1·31, is lower by ·43. In the *Home*, the death rate *nil* from "rheumatism" and from "other diseases" contrasts with ·29 under each heading for the previous year, while from "tubercular diseases" the rate 3·09,

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is higher by ·10. In the *Aldershot*, the death rate from "tubercular diseases" 1·17, is lower by ·88, and from "rheumatism" *nil* contrasts with ·09, while that from "other diseases" ·18, contrasts with *nil* for the previous year. In the *Channel Islands*, the death rate from "tubercular diseases" 22·2, is lower by 1·56. In the *Dublin District*, the death rate from "tubercular diseases" 1·20, is lower by 1·43, and from "rheumatism" ·09, lower by ·02. In the *Woolwich District*, the death rate from "tubercular diseases" 2·40, is higher by ·37, while that from "other diseases" *nil* contrasts with ·19 for the previous year. In the *North British* the death rate from "tubercular diseases" 2·62, is higher by 1·12, while that from "secondary syphilis" *nil* contrasts with ·30, and from "rheumatism" ·29, is lower by ·01. In the *Belfast*, the death rate from "tubercular diseases" 2·73, is higher by 1·79. In the *Cork*, the death rate from "tubercular diseases" 2·07, is higher by ·44, while that from "secondary syphilis" *nil* contrasts with ·16.

Local Diseases.—*Diseases of the Nervous System.*—The admission rate in the *Northern District* 14·6, exceeds that for the previous year by ·1; in the *Eastern* 13·9, is higher by 2·3; in the *Western* 16·6, higher by 3·2; in the *Southern* 12·9, higher by ·5; in the *Chatham* 11·7, higher by 1·5; in the *South-Eastern* 19·1, higher by 5·4; in the *Aldershot* 15·2, higher by 6·9; in the *North British* 13·1, higher by ·2; in the *Dublin* 11·1, higher by ·5; and in the *Cork* 13·6, higher by 3·0. In the *Home District* 10·6, is lower by 2·4; in the *Woolwich* 5·6, is lower by 4·0; in the *Channel Islands* 5·2, is lower by 4·6; and in the *Belfast* 13·2, is lower by 9·3. The death rate in the *Eastern District* 1·14, is higher by ·11; in the *Western* ·83, is higher by ·62; in the *Chatham* ·25, contrasts with *nil;* in the *South-Eastern* ·73, is higher by ·58; in the *Home* ·67, is higher by ·38; in the *Aldershot* ·63, is higher by ·36; and in the *Cork* ·52, contrasts with *nil.* In the *Northern District* ·35, is lower by ·15; in the *Southern* ·13, is lower by ·27; in the *Woolwich nil* contrasts with ·55; in the *North British* ·58, is lower by ·62; in the *Belfast nil* contrasts with ·47; and in the *Dublin* ·18, is lower by ·25. In the *Channel Islands* no death occurred during either year.

Diseases of the Circulatory System.—The admission rate in the *Eastern District* 17·1, exceeds that for the previous year by 6·5; in the *Western* 12·6, is higher by 2·1; in the *Southern* 18·1, is higher by 4·0; in the *South-Eastern* 18·1, is higher by 5·1; in the *Woolwich* 9·5, is higher by ·2; in the *Aldershot* 31·2, is higher by 19·2; in the *Dublin* 13·3, is higher by ·1, and in the *Cork* 19·7, is higher by 8·8. In the *Northern District* 10·7, is lower by 3·2; in the *Chatham* 13·9, is lower by 9·8; in the *Home* 9·9, is lower by 1·2; in the *North British* 16·3, is lower by 3·5; in the *Channel Islands* 11·9, is lower by 3·2; and in the *Belfast* 19·5, is lower by 2·0. The death rate in the *Eastern District* 1·37, is higher by ·60; in the *Western* 1·45, is higher by ·84; in the *Chatham* ·99, is higher by ·26; in the *South-Eastern* ·73, is higher by ·29; in the *Home* 1·07, is higher by ·36; in the *Woolwich* ·92, is higher by ·37; in the *Aldershot* ·90, is higher by ·35; in the *Dublin* ·83, is higher by ·61; and in the *Cork* ·69, is higher by ·36; in the *Northern District* 93, is lower by ·07. In the *South-Eastern* ·52, is lower by ·02; in the *North British* 1·16, is lower by ·64; and in the *Belfast* ·91, is lower by ·96.

Diseases of the Respiratory System.—As compared with the results for the previous year, in the *Northern District* the admission rate 70·3, is lower by 32·5; in the *Eastern* 95·2, is lower by 31·6; in the *Southern* 79·0, is lower by 52·1; in the *Chatham* 95·5, is lower by 16·5; in the *South-Eastern* 100·2, is lower by 2·3; in the *Home* 84·5, is lower by 35·0; in the *Woolwich* 38·4, is lower by 14·9; in the *North British* 83·6, is lower by 13·9; in the *Channel Islands* 77·4, is lower by 8·7; in the *Belfast* 64·9, is lower by 53·5; in the *Dublin* 51·5, is lower by 49·0; and in the *Cork* 59·6, is lower by 29·5. The admission rate in the *Western District* 73·3, is higher by 1·2; and in the *Aldershot* 92·2, is higher by 26·3. The death rate in the *Northern District* 1·87, is lower by ·51; in the *Eastern* 1·83, is lower by ·49; in the *Western* ·83, is lower by 1·03; in the *Southern* ·91, is lower by ·17; in the *Chatham* ·74, is lower by ·47; in the *Aldershot* 1·08, is lower by ·19; in the *North British* 2·04, is lower by ·96; in the Dublin ·83, is lower by ·04; and in the *Cork* 1·03, is lower by ·76. The death rate in the *South Eastern District* 1·60, is higher by ·15, in the *Home* 1·61, is higher by ·48; in the *Woolwich* 1·85, is higher by ·37; and in the *Belfast* 1·81, is higher by ·41; in the *Channel Islands* no death occurred during either year.

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In continuation of the statistical information given in the reports of previous years, the admissions for primary venereal sores and gonorrhœa at certain large stations in the United Kingdom, and their rates per 1,000 of the average annual strength, are shown in the following Table :—

Stations under the Act.

Stations.	Average Annual Strength.	Admitted for Primary Venereal Sores.	Admitted for Gonorrhœa.	Ratio per 1,000 of the Strength admitted for Primary Venereal Sores.	Ratio per 1,000 of the Strength admitted for Gonorrhœa.
Devonport and Plymouth	2,632	132	412	50	157
Portsmouth	4,485	338	537	76	121
Chatham, Sheerness, and Gravesend.	4,031	250	397	62	98
Woolwich	5,308	390	423	73	80
Aldershot	11,068	823	1,172	74	106
Windsor	989	105	78	106	79
Shorncliffe	2,499	215	140	86	56
Colchester	2,145	93	196	43	91
Winchester	865	39	76	45	88
Dover	2,286	113	192	49	84
Canterbury	1,224	92	99	75	81
Maidstone	209	9	27	43	129
Cork	1,955	140	168	72	86
Curragh	4,380	541	470	124	107
Total of 14 stations under the Act	44,026	3,280	4,387	74	100

Stations *not* under the Act.

Stations.	Average Annual Strength.	Admitted for Primary Venereal Sores.	Admitted for Gonorrhœa.	Ratio per 1,000 of the Strength admitted for Primary Venereal Sores.	Ratio per 1,000 of the Strength admitted for Gonorrhœa.
Isle of Wight	1,013	70	78	69	77
London	4,445	1,001	625	225	141
Warley	479	32	31	67	65
Hounslow	873	102	63	117	72
Pembroke Dock	721	46	64	64	89
Sheffield	664	102	88	154	133
Manchester	943	219	170	232	180
Preston	716	70	159	98	222
Edinburgh	1,112	83	132	75	119
Fermoy	513	48	33	94	64
Limerick	763	47	98	62	128
Athlone	655	32	35	49	53
Dublin	4,357	940	605	216	139
Belfast	800	218	124	273	155
Total of 14 stations *not* under the Act	18,054	3,010	2,305	167	128

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Stations.	Rate of Admissions into Hospital per 1,000 of Mean Strength for Primary Venereal Sores in—													
	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.*	1875.*	1876.*	1877.*	1878.*	1879.*	1880.*
Devonport and Plymouth.	76	66	74	58	50	59	37	36	29	27	28	34	33	50
Portsmouth	116	86	62	51	41	40	44	48	30	27	27	15	27	76
Chatham and Sheerness.	71	63	41	47	65	49	41	33	17	33	43	49	51	62
Woolwich	88	46	52	43	58	60	60	47	59	42	29	38	44	73
Aldershot	81	77	63	67	65	62	72	52	46	47	46	53	56	74
Windsor	58	136	93	67	78	96	84	63	41	41	80	39	46	106
Shorncliffe	42	77	60	100	30	33	21	14	18	22	21	41	68	86
Colchester	145	182	85	42	32	55	42	20	32	30	52	19	37	43
Winchester	52	104	101	61	29	57	27	38	27	26	18	38	23	45
Dover	132	111	80	30	24	47	38	37	27	30	19	31	36	49
Canterbury	119	114	45	152	38	43	20	36	12	27	19	27	34	75
Maidstone	242	122	128	68	44	57	50	66	7	28	34	7	19	43
Cork	72	61	73	68	55	62	61	26	21	21	16	36	29	72
Curragh	104	85	88	56	35	50	30	46	35	18	38	54	77	124
Isle of Wight	59	103	129	64	66	57	37	89	89	54	51	50	56	60
London	163	148	144	160	190	199	185	179	187	146	166	250	173	225
Warley	74	92	61	55	57	66	22	32	37	51	59	140	120	67
Hounslow	62	106	85	88	45	90	67	68	24	75	48	40	19	117
Pembroke Dock.	28	35	51	54	28	27	25	21	31	29	16	12	15	64
Sheffield	163	107	146	77	126	98	71	49	87	119	64	96	132	154
Manchester	177	115	160	92	70	98	91	106	89	113	131	205	205	232
Preston	87	87	172	134	75	114	123	97	57	77	77	73	57	98
Edinburgh	63	46	60	99	69	43	44	25	27	89	47	72	80	75
Fermoy	70	47	116	89	33	56	21	10	12	31	20	26	33	94
Limerick	117	114	54	136	57	100	78	58	25	47	75	85	28	62
Athlone	85	38	42	44	47	14	14	8	10	8	35	29	15	49
Dublin	129	139	180	128	117	165	136	95	73	76	103	154	117	216
Belfast	89	56	52	43	61	78	103	64	44	57	43	66	124	273

The group of 14 stations under the Act shows an increase of 27 per 1,000 men on the corresponding rate of the preceding year; the contrasted group of 14 stations not under the Act shows an increase of 59 per 1,000 men.

* Stoppage of pay in force.

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The results obtained by a different grouping of the stations in the United Kingdom are shown in the following Table :— *United Kingdom.*

Groups.	Average Annual Strength.	Admissions into Hospital for Primary Venereal Sores.	Ratio per 1,000 of the Strength of Admissions for Primary Venereal Sores.
The 14 stations under the Contagious Diseases Act.	44,026	3,280	74
All other stations - -	39,869	4,756	119
Total -	83,895	8,036	96

No admissions for this disease are returned at 26 stations having an aggregate average annual strength of 557 men.

TABLES relating to the CONTAGIOUS DISEASES ACTS, as regards the ARMY, contrasting the Results at 28 Large Stations in the United Kingdom, being all at which the Force was 500 Men and upwards, when the first Act was applied.

I.—TABLES showing the Admissions into Hospital for Primary Venereal Sores and for Gonorrhœa at 28 Stations of Troops in the United Kingdom, from 1860.

Year.	The Fourteen Stations successively brought under the Acts.					Fourteen Large Stations not under the Acts.				
	Average Annual Strength.	Admissions into Hospital for Primary Venereal Sores.	Admissions into Hospital from Gonorrhœa.	Ratio per 1,000 of the Strength. Primary Venereal Sores.	Ratio per 1,000 of the Strength. Gonorrhœa.	Average Annual Strength.	Admissions into Hospital for Primary Venereal Sores.	Admissions into Hospital from Gonorrhœa.	Ratio per 1,000 of the Strength. Primary Venereal Sores.	Ratio per 1,000 of the Strength. Gonorrhœa.
1860 - - -	57,479	8,405	7,966	146	139	17,118	2,292	2,374	134	139
1861 - - -	51,328	7,267	7,133	142	139	17,126	2,049	2,023	120	118
1862 - - -	45,322	5,314	6,283	117	139	15,026	1,500	2,070	100	138
1863 - - -	43,419	4,653	5,202	107	120	15,132	1,612	1,816	107	120
Totals for 4 years -	197,548	25,639	26,584	—	—	64,402	7,453	8,283	—	—
Average for 1860-63 -	49,387	6,410	6,646	130	135	16,100	1,863	2,071	116	129
1864 - - -	40,694	4,135	4,803	102	118	14,894	1,647	1,636	111	110
1865 - - -	43,078	4,077	4,937	95	115	14,091	1,418	1,968	101	140
1866 - - -	39,476	3,444	4,573	87	116	14,595	1,154	1,663	79	114
1867 - - -	39,911	3,640	5,274	91	132	20,589	2,372	2,670	115	130
1868 - - -	42,595	3,533	5,685	83	133	19,486	2,130	2,256	109	115
1869 - - -	42,017	2,765	4,466	66	106	17,739	2,273	1,856	128	105
Totals for 6 years -	247,771	21,594	29,738	—	—	101,394	10,994	12,029	—	—
Average for 1864-69 -	41,295	3,599	4,956	87	120	16,899	1,832	2,005	108	119
1870 - - -	41,580	2,268	4,081	55	98	17,852	2,022	1,723	113	96
1871 - - -	54,096	2,763	6,254	51	116	19,967	1,865	2,137	93	107
1872 - - -	50,794	2,752	5,280	54	104	19,950	2,457	2,113	123	106
1873 - - -	48,039	2,420	3,946	50	82	19,801	2,025	1,888	102	95
1874 - - -	48,136	2,039	2,968	42	62	18,879	1,661	1,450	88	77
1875 - - -	48,606	1,717	2,825	35	58	19,573	1,552	1,405	79	72
1876 - - -	48,620	1,622	3,302	33	68	18,790	1,554	1,677	83	89
1877 - - -	52,422	1,809	3,585	35	68	19,076	1,730	2,234	91	117
1878 - - -	55,813	2,235	4,352	40	78	20,749	2,723	2,508	131	121
1879 - - -	42,646	2,005	2,939	47	69	18,058	1,943	1,719	108	95
1880 - - -	44,026	3,280	4,387	74	100	18,054	3,010	2,305	167	128
Totals for 11 years -	534,778	24,910	43,919	—	—	210,739	22,542	21,159	—	—
Average for 1870-80 -	48,616	2,265	3,993	47	82	19,158	2,049	1,924	107	100

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N.B.—For the years 1860–66 inclusive, Windsor has been omitted from the group of stations under the Act, and London from that *not* under the Act, as the returns for those years do not afford the necessary information.

II.—TABLES showing the Number of Men always in Hospital with Primary Venereal Sores at 28 Stations, for Troops in the United Kingdom, in each Year, from 1870 to 1879, inclusive.

Year.	Under the Act.			Not under the Act.		
	Average Annual Strength.	Constantly in Hospital with Primary Venereal Sores.	Ratio per 1,000 of the Strength.	Average Annual Strength.	Constantly in Hospital with Primary Venereal Sores.	Ratio per 1,000 of the Strength.
1870	41,580	186	4·46	17,852	174	9·74
1871	54,096	210	3·89	19,957	161	8·07
1872	50,794	232	4·56	19,960	223	11·29
1873	48,039	214	4·45	19,801	175	8·86
1874	48,136	150	3·11	18,879	130	6·89
1875	48,606	129	2·66	19,573	115	5·88
1876	48,620	120	2·47	18,790	112	5·94
1877	52,422	137	2·61	19,076	119	6·23
1878	55,813	175	3·14	20,749	185	8·90
1879	42,646	154	3·61	18,058	149	8·25
1880	44,026	252	5·72	18,054	218	12·07
Total	534,778	1,959	—	210,739	1,763	—
Average for 11 years	48,616	178	3·66	19,158	160	8·35

For the four years (1860–63) preceding that in which the first Contagious Diseases Act was passed, the average rate of prevalence of primary venereal sores at a group of stations, each of which was successively placed under the Act, is 130, and that for gonorrhœa is 135 per 1,000 of the strength. At another group of 14 stations (originally selected for comparison because at the time the stations comprised in it were large ones, that is, had not less than 500 men) the rate of prevalence of primary venereal sores is 116, and that for gonorrhœa is 129 per 1,000 of the strength.

In the next period shown (1864–69) the Act was applied successively at each of the stations in the subjected group; in 1865 it was in operation at three stations, in 1866 at four, in 1867 at five, in 1868 at eight, in 1869 at 10, in 1870 it was in operation at all the 14 stations. During this period the average rate of prevalence of primary venereal sores fell to 87 per 1,000 of the strength, in the subjected group; in the contrasted group of large stations it fell to 108 per 1,000 of the strength. The result, therefore, is that the subjected group of stations which before the application of the Act had a rate of prevalence 14 per 1,000 higher than the unsubjected group, for the period of its partial application, has a rate of prevalence 21 per 1,000 lower than that of the unsubjected group.

In the third period shown (1870–80) the Act was in force for the whole time at every one of the stations in the subjected group, and the average rate of prevalence of the disease fell to 47 per 1,000 men, an average rate higher by 3 per 1,000 when compared with that for the period 1870 to 1879: at the unsubjected group the rate fell to 107 per 1,000 men, an average rate higher by 6 per 1,000 when compared with that for the period from 1870 to 1879.

The rate of prevalence of gonorrhœa in the first years of the application of the Act did not materially differ in the two groups of stations; in the last years, however, the results are favourable for the subjected group, the rate of which in 1880, is nearly one fourth lower than that of the unsubjected one.

In Table II. the average number of men always in hospital on account of primary venereal sores at each of the groups of stations for the years 1870–80 is shown. The average rate of the subjected group is less than the half of that of the other.

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Diseases of the Digestive System.—The admission rate in the *Northern District* 105·2, exceeds that for the previous year by 9·6; in the *Eastern* 117·4, is higher by 3·2; in the *South Eastern* 107·8, is higher by 5·9; in the *Home* 125·5, is higher by 20·0; in the *Woolwich* 107·6, is higher by 16·7; in the *Aldershot* 120·8, is higher by 40·8; in the *North British* 110·4, is higher by 20·4; in the *Belfast* 110·4, is higher by ·8; and in the *Cork* 115·0, is higher by 4·9. The admission rate in the *Western District* 97·5, is lower by 2·0; in the *Southern* 128·3, is lower by 15·9; in the *Chatham* 113·9, is lower by 3·6; in the *Channel Islands* 93·8, is lower by 32·3; and in the *Dublin* 70·1, is lower by 19·1. The death rate in the *Northern District* ·70, is higher by ·20; in the *Eastern* ·91, is higher by ·65; in the *Southern* 1·43, is higher by 1·03; in the *Chatham* ·50 contrasts with *nil*; in the *Woolwich* ·74, is higher by ·55; in the *North British* ·58, is higher by ·28; and in the *Dublin* ·64, is higher by ·42. In the *South Eastern District* the death rate *nil*, contrasts with ·44; in the *Home nil* contrasts with ·14; in the *Aldershot* ·27, is lower by ·18; in the *Belfast nil* contrasts with ·47; and in the *Cork* ·34, is lower by ·31: in the *Western District* the death rate ·21, is identical with that for the previous year; and in the *Channel Islands* no death occurred during either year. *United Kingdom.*

Diseases of the Urinary System.—The admission rates in the *Northern District* from "gonorrhœa" 128·1, and from the "sequelæ" 19·7, exceed the corresponding rates for the previous year by 35·1 and ·9 respectively; in the *Eastern* the admission rate from "gonorrhœa" 108·7, is higher by 53·5, while that from the "sequelæ" 9·4, is lower by 5·8; in the Western from "gonorrhœa" 135·2, and from the "sequelæ" 15·9, are higher by 54·8 and 6·8 respectively; in the *Southern* 107·1 from "gonorrhœa" and 11·0 from the "sequelæ," are higher by 41·0 and 1·1 respectively; in the *Chatham* 98·5 from "gonorrhœa" and 12·9 from the "sequelæ" are higher by 19·7 and 3·7 respectively; in the *South Eastern* 74·8 from "gonorrhœa" and 12·7 from the "sequelæ" are higher by 15·7 and 5·4 respectively; in the *Home* from "gonorrhœa" 114·5, and from the "sequelæ" 13·0, are higher by 25·1 and ·2 respectively; in the *Woolwich* the admission rate from "gonorrhœa" 79·4, is higher by 28·1, while that from the "sequelæ" 18·5, is lower by 1·3; in the *Aldershot*, 105·9 from "gonorrhœa" and 8·4 from the "sequelæ" are higher by 18·4 and 4·4 respectively; in the *North British*, 96·7 from "gonorrhœa" and 18·4 from the "sequelæ" are higher by 25·9 and 12·1 respectively; in the *Belfast*, from "gonorrhœa" 116·3, and from the "sequelæ" 7·3, are higher by 31·6 and ·7 respectively; in the *Dublin*, from "gonorrhœa" 110·8, and from the "sequelæ" 13·5, are higher by 33·3 and 4·3 respectively; and in the *Cork*, from "gonorrhœa" 89·6, is higher by 28·4, while from the "sequelæ" 8·4 is lower by ·2.

The admissions into hospital for gonorrhœa, at specified groups of stations in the United Kingdom, are shown in the following Table:—

Groups.	Average Annual Strength of the Group.	Admissions into Hospital for Gonorrhœa.	Ratio per 1,000 of the Strength of Admissions for Gonorrhœa.
The 14 stations under the Contagious Diseases Act -	44,026	4,387	100
The 14 *large stations* not under the Act - - -	18,054	2,305	128
All other stations not under the Act - - -	21,815	2,238	103
Total - -	83,895	8,930	106

As compared with the results given in the corresponding table in the report for the previous year, the admission rate in the first group is higher by 31, in

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United Kingdom.

the second by 33, and in the third by 33 per 1,000. The admission rate in the second group exceeds that in the first by 28 and that in the third by 25 per 1,000; during the previous year the rate in the second group exceeded that in the first by 26, and that in the third by 25 per 1,000.

Diseases of the Cutaneous System.—The admission rate in the *Northern District* 151·0, exceeds that for the previous year by 34·2; in the *Eastern* 116·5 is higher by 36·6; in the *Western* 110·6, is higher by 9·6; in the *Southern* 129·2 is higher by 19·2; in the *South Eastern* 116·4 is higher by 4·2; in the *Home* 112·4 is higher by 29·7; in the *Woolwich* 105·7 is higher by 26·3; in the Aldershot 120·8 is higher by 12·4; in the *North British* 127·9 is higher by 12·5; and in the *Belfast* 148·0 is higher by 6·6; in the *Chatham District* 110·9 is lower by 9·1; in the *Channel Islands* 89·4 is lower by 79·8. In the *Dublin* 121·2 is lower by 1·0; and in the *Cork* 136·0 is lower by 11·6.

Poisons.—The admission rate in the *Northern District* 2·2 is higher than that for the previous year by ·2; in the Western 2·5 is higher by 1·1; in the Southern 2·3 is higher by ·4; in the *Home* 4·4 is higher by 2·3; in the *Woolwich* ·9 is higher by ·5; in the *Aldershot* 1·3 is higher by ·9; in the *North British* 1·7 is higher by ·2; in the *Belfast* 5·0 is higher by 2·2; in the *Dublin* 2·3 is higher by 1·9; and in the *Cork* ·9 is higher by ·4. In the *Eastern District* the admission rate 3·0 is lower by 6·8; in the *Chatham* ·2 is lower by 1·0; in the *South Eastern* 1·3 is lower by 1·5; and in the *Channel Islauds* 5·2 is lower 1·6. The death rate *nil* in the *Northern* and *Western Districts* contrasts respectively with ·12 and ·41 for the previous year; in the *South Eastern* ·15 is lower by ·14; in the *North British nil* contrasts with ·30, and in the *Channel Islands* with ·75. In the *Chatham District* the death rate ·25, contrasts with *nil;* in the *Woolwich* ·37 is higher by ·18; and in the *Dublin* ·09 contrasts with *nil;* in the *Home* ·13 may be considered identical with ·14 for the previous year; and in the *Eastern, Southern, Aldershot, Belfast,* and *Cork* Districts, no death occurred during either year.

Injuries.—The combined admission rate from "general" and "local injuries" in the *Northern District* 128·5 is higher than that for the previous year by 12·1; in the *Eastern* 111·4 is higher by 19·1; in the *Western* 93·2 is higher by 4·8; in the *Southern* 121·1 is higher by 5·3; in the *South Eastern* 119·5 is higher by 8·0; in the *Home* 100·8 is higher by 8·1; in the *Woolwich* 91·5 is higher by 17·3; in the *Aldershot* 90·0 is higher by 8·0; in the *North British* 138·4 is higher by 23·3; in the *Belfast* 126·3 is higher by 20·0; and in the *Dublin* 106·3 is higher by 11·9. In the *Chatham District* 92·3 is lower by 26·4; in the *Channel Islands* 139·2 is lower by 35·3; and in the *Cork* 122·2 is lower by 3·4. The death rate in the *Northern District* from "general injuries" ·35 is lower than that for the previous year by ·15, and from "local" ·70 is higher by ·32; in the *Eastern,* from "general" ·23 is lower by ·29, and from "local" *nil* contrasts with ·26; in the *Western,* from "general" *nil* contrasts with ·41, and from "local" ·83, with *nil;* in the *Southern,* ·13 from "general" is lower by ·14, and from "local" *nil* contrasts with ·40; in the *Chatham, nil* from "general" contrasts with ·48, and from "local" is identical with the rate for the previous year; in the *South Eastern,* ·58 from "general" is higher by ·29, and ·29 from "local" is lower by ·15; in the *Home,* ·40 from "general" and ·27 from "local" contrast with *nil* under each heading for the previous year; in the *Woolwich,* from "general and local" respectively, ·19, is lower than the rate from "general," and identical with that from "local" for the previous year; in the *Aldershot,* ·18 from "general" is lower by ·18, and ·27 from "local" is lower by ·09; in the *North British,* ·88 from "general" contrasts with *nil,* and 1·46 from "local" is higher by 1·16; in the *Channel Islands, nil* from "general" contrasts with ·75, and from "local" 1·49 contrasts with *nil;* in the *Belfast, nil* from "general" is identical with the rate for the previous year, and ·45 from "local" contrasts with *nil;* in the *Dublin,* ·18 from "general" and ·09 from "local" are lower by ·15 and ·02 respectively; and in the *Belfast,* ·52 from "general" is lower by ·13, and ·52 from "local" is higher by ·36.

The following Table, compiled from the Principal Medical Officer's Returns, shows the admissions, deaths, number of men invalided, and number con-

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stantly sick, from each arm of the service, with the ratios per 1,000 of the strength and the corresponding ratios for the previous 10 years :— *United Kingdom*

Arms of the Service.	Average Strength.	Admitted into Hospital.	Died.	Discharged as Invalids.	Average Number Constantly Sick.	Annual Ratio per 1,000 of Strength.				Average of 10 Years, 1870-79.			
						Admitted.	Died.	Invalided.	Constantly Sick.	Admitted.	Died.	Invalided.	Constantly Sick.
Household Cavalry	1,199	777	9	27	36·47	648·0	7·51	22·52	30·42	632·3	6·06	15·02	29·00
Cavalry - -	9,958	10,121	57	278	538·61	1016·4	5·72	27·92	54·09	841·1	6·75	32·65	41·22
Royal Artillery -	16,022	12,535	128	315	679·80	782·4	7·99	19·66	42·43	808·0	9·22	28·70	39·21
Royal Engineers -	2,499	1,469	16	40	76·67	587·8	6·40	16·01	30·68	*606·4	6·97	17·59	†27·03
Foot Guards -	5,737	5,759	43	187	291·64	1003·8	7·50	32·60	50·83	804·1	7·91	23·16	43·59
Infantry Regiments, including Depôts.	34,007	32,088	197	816	1679·43	943·6	5·79	24·00	49·38	748·6	7·69	27·21	34·73
Brigade Depôts -	10,388	9,871	119	268	415·47	950·2	11·46	25·80	39·90	857·7	11·82	47·78	39·67
Garrison Staff and Departments.	4,423	2,303	31	46	150·69	520·7	7·01	10·40	34·07	*525·3	9·61	15·44	†24·41

* For three years only. † For one year only

As compared with the results for the previous year, the admission rate per 1,000 of the Household Cavalry 648·0, is higher by 7·0; of the Cavalry 1016·4, is higher by 105·9; of the Royal Artillery 782·4, is higher by 50·7; of the Royal Engineers 587·8, is higher by 44·1; of the Foot Guards 1003·8, is higher by 109·3; of the Infantry Regiments 943·6, is higher by 71·1; and of the Brigade Depôts 950·2, is higher by 101·1. The admission rate of the Garrison Staff and Departments 520·7, is lower by 25·1.

The death rate of the Foot Guards 7·50, is lower by ·07; of the Infantry Regiments 5·79, is lower by 1·06; of the Brigade Depôts 11·46, is lower by 3·36; and of the Garrison Staff and Departments 7·01, is lower by 3·23. The death rate of the Household Cavalry 7·51, is higher by 5·85; of the Cavalry 5·72, is higher by ·26; of the Royal Artillery 7·99, is higher by ·13; and of the Royal Engineers 6·40, is higher by ·21.

The rate of invaliding of the Cavalry 27·92, is lower by 2·24; of the Royal Artillery 19·66, is lower by 9·13; of the Royal Engineers 16·01, is lower by 2·91; of the Infantry Regiments 24·00, is lower by 2·65; of the Brigade Depôts 25·80, is lower by 9·37; and of the Garrison Staff and Departments 10·40, is lower by 3·07. The invaliding rate of the Household Cavalry 22·52, is higher by 4·28; and of the Foot Guards 32·60, is higher by 8·12.

In the following Table, to the strength of each Arm of the Service one half of the number of men belonging to it who were placed on the pension list during the year has been added, and to the mortality of the arm the deaths occurring before the 31st December among the men pensioned from it :—

Arms of the Service.	1880.			1870-79.
	Average Strength correcte as ab vd	Deaths of Soldiers and Pensioners.	Ratio of Deaths per 1,000 of the Strength.	Ratio of Deaths of Soldiers and Pensioners per 1,000 of the Strength.
Household Cavalry -	1,221	9	7·37	7·25
Cavalry - - -	10,116	61	6·03	7·53
Royal Artillery - -	16,606	146	8·79	9·38
Royal Engineers - -	2,554	17	6·66	7·12
Foot Guards - -	5,824	48	8·24	9·04
Infantry Regiments -	34,849	222	6·37	8·57
Brigade Depôts - -	10,403	119	11·44	12·67
Garrison Staff and Departments - - -	4,546	33	7·26	10·34
Total - -	86,119	655	7·61	8·68

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United Kingdom.

As compared with the results for the previous year the total death rate 7·61, is lower by ·91; in the Royal Artillery the death rate 8·79, is lower by 0·3; in the Royal Engineers 6·66, is lower by ·71; in the Foot Guards 8·24, is lower by ·27; in the Infantry Regiments 6·37, is lower by 1·24; in the Brigade Depôts 11·44, is lower by 3·39; and in the Garrison Staff and Departments 7·26, is lower by 3·09. The death rate in the Household Cavalry 7·37, is higher by 5·73; and in the Cavalry 6·03, is higher by ·01.

As compared with the average death rate of the 10 years 1870–79, a decrease is apparent for all arms except the Household Cavalry, which shows a fractional increase.

Vaccination.

The following Table shows the condition, as to vaccination, of recruits found fit for the service on primary inspection by Army Medical Officers. No information is available respecting those primarily inspected by Civil Medical Practitioners :—

	Number of Recruits found fit for the Service.	Ratio per 1,000.
Had marks of vaccination -	22,197	924·3
Had marks of small-pox - -	674	28·1
Had neither marks of vaccination nor small-pox - - - -	1,144	47·6
Total - -	24,015	1000·0

As compared with the results for the previous year, an increase of 10·4 per 1,000 is observed among recruits bearing marks of vaccination, and a decrease of 9·2 and 1·2 per 1,000 respectively among those who had marks of small-pox, and those who had neither marks of vaccination nor of small-pox.

The following Table, compiled from the Annual Returns, shows the number of soldiers vaccinated during the year, with the proportions per 1,000 of successful vaccinations and failures, when vaccinated with fresh or preserved lymph :—

Results.	Vaccinated during the period.					
	Arm to arm.		From Preserved Lymph.		Total.	
	Primary Vaccination.	Re-vaccination.	Primary Vaccination.	Re-vaccination.	Primary Vaccination.	Re-vaccination.
A perfect vaccine pustule.	124	4,781	157	4,690	281	9,471
A modified vaccine pustule.	61	3,529	90	4,152	151	7,681
A failure in -	68	1,528	58	4,041	126	5,569
Total - -	253	9,838	305	12,883	558	22,721

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Results.	Proportions per 1,000.					
	Arm to arm.		From Preserved Lymph.		Total.	
	Primary Vaccination	Re-vaccination.	Primary Vaccination.	Re-vaccination.	Primary Vaccination.	Re-vaccination.
A perfect vaccine pustule.	490·12	485·97	514·76	364·05	503·59	416·84
A modified vaccine pustule.	241·11	358·71	295·08	322·28	270·61	338·06
A failure in -	268·77	155·32	190·16	313·67	225·80	245·10
Total - -	1000·00	1000·00	1000·00	1000·00	1000·00	1000·00

As compared with the results for the previous year, in arm to arm primary vaccination, a decrease of 101·28 per 1,000 is observed in the proportion of perfect vaccine pustules, and of 6·20 of modified, and an increase of 107·48 of failures. In arm to arm re-vaccination there is an increase of 61·87 per 1,000 in perfect vaccine pustules, of 16·68 of failures, and a decrease of 78·55 per 1,000 in modified.

In primary vaccination from preserved lymph an increase of 13·13 per 1,000 is observed in failures, of 3·21 in modified, and a decrease of 16·34 in perfect vaccine pustules. In re-vaccination from preserved lymph an increase of 11·13 per 1,000 is observed in perfect vaccine pustules, of 11·41 in failures, and a decrease of 22·54 in modified vaccine pustules.

In the total results of primary vaccination a decrease of 46·08 per 1,000 has occurred in perfect, and of 7·54 in modified vaccine pustules, and an increase of 53·62 in failures.

In the total results of re-vaccination an increase of 38·26 per 1,000 has occurred in perfect vaccine pustules, and of 1·84 in failures, and a decrease of 40·10 per 1,000 in modified pustules.

By primary vaccination is understood the first vaccination of individuals on whom the operation has never previously been successfully performed.

The cases of small pox were in the United Kingdom 3, Gibralter 1, Malta 2, China and Straits Settlements 2, and India 12, giving a total of 20 cases. Six of the cases in India occurred on field service in Afghanistan. The deaths were at Malta 1, and in India 2.

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On the Recruiting of the Army.

The number of recruits inspected during the year, as shown by the Annual Returns was 46,108; of these 39,942 were examined by Army Medical Officers, and 6,166 by Civil Medical Practitioners.

The number of recruits rejected by Army Medical Officers was 15,927 or 398·75 per 1,000. The number of recruits rejected on primary inspection by Civil Medical Practitioners was 1,320 or 214·08 per 1,000. On secondary inspection* by Army Medical Officers of recruits primarily inspected by Civil Medical Practitioners 1,547 were rejected, making the total number of rejections 18,794 or 407·61 per 1,000 of the number examined. The total proportion of rejections is higher than that for the previous year by 44·88 per 1,000.

The following Table shows the numbers inspected and rejected, and the ratios of rejections per 1,000 examined :—

Examined by	Number of Recruits Inspected.	Number Rejected			Ratio of Rejections per 1,000 Inspected.	
		On Inspection.	On Secondary Inspection.	Total.	On Inspection.	Both Primary and Secondary Inspection.
Army Medical Officers -	39,942	15,927	1,547	18,794	398·75	407·61
Civil Medical Practitioners, primarily.	6,166	1,320			214·08	
Total - -	46,108	17,247	1,547	18,794	374·06	407·61

The proportions of rejections by Army Medical Officers and by Civil Medical Practitioners exceed those for the previous year by 44·79 and 11·92 respectively.

The native countries of recruits, the ratios of rejections, and the proportion per 1,000 furnished by each country, are given in the following Table :—

Native Countries of Recruits.	Examined by Army Medical Officers.		Primarily Examined by Civil Medical Practitioners.		Rejected on Secondary Inspection.	Total.		Proportion Rejected per 1,000 Inspected.	Proportion per 1,000 Recruits furnished by each Country.
	Inspected.	Rejected.	Inspected.	Rejected.		Primarily Inspected.	Rejected at Primary and Secondary Inspections.		
England and Wales	28,053	11,435	4,644	991	1,093	32,697	13,519	413·5	702
Scotland - -	3,292	1,346	406	115	126	3,698	1,587	429·2	82
Ireland - -	8,054	2,983	1,071	202	317	9,125	3,502	383·8	202
British Colonies and Foreign Countries -	542	163	44	11	11	586	185	316·2	14
Not stated -	1	—	1	1	—	2	1	500·0	—
Total -	39,942	15,927	6,166	1,320	1,547	46,108	18,794	407·6	1,000

* *Note.*—According to existing regulations the term "secondary inspection" is applicable only to the class above indicated.

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As compared with the results for the previous year the ratio of rejections of recruits born in England and Wales is higher by 51 per 1,000, of those born in Scotland higher by 44·6, of those born in Ireland higher by 28·0 per 1,000, and of those born in British Colonies and Foreign Countries higher by 4·7 per 1,000. *United Kingdom.*

The proportion of recruits born in England and Wales is higher than that for the previous year by 21 per 1,000, and of those born in British Colonies and Foreign Countries higher by 3 per 1,000, of those born in Scotland and Ireland the proportions per 1,000 are lower by 15 and 8 per 1,000 respectively.

The following Table shows the number of recruits inspected for each arm of the service, the number rejected, the ratios of rejections, and the proportion per 1,000 inspected for each arm :—

Arms of the Service.	Examined by Army Medical Officers.		Primarily Examined by Civil Medical Practitioners.		Total Inspections.		Rejected at Secondary Inspections.	Total Rejected at Primary and Secondary Inspections.	Ratio of Rejections per 1,000 of Recruits Inspected.	Proportion per 1,000 inspected for each Arm of the Service.
	Inspected.	Rejected.	Inspected.	Rejected.	Inspected.	Rejected.				
Household Cavalry -	250	76	—	—	250	76	2	78	312·0	5
Cavalry of the Line -	3,701	1,579	129	14	3,830	1,593	46	1,639	427·9	84
Royal Artillery -	5,645	2,024	696	125	6,341	2,149	137	2,286	360·5	138
Royal Engineers -	845	324	40	7	885	331	11	342	386·4	19
Foot Guards - -	1,408	403	121	19	1,529	422	66	488	319·2	33
Infantry Regiments -	26,516	10,651	5,173	1,153	31,689	11,804	1,282	13,086	412·9	687
Departmental Corps	1,577	868	7	2	1,584	870	3	873	551·1	54
Not stated - -	—	2	—	—	—	2	—	2	—	—
Total - -	39,942	15,927	6,166	1,320	46,108	17,247	1,547	18,794	407·6	1,000

As compared with the results for the previous year the proportion of rejections is higher of recruits for Departmental Corps by 156·5, of those for the Royal Engineers by 104·6, of those for the Cavalry by 86·3, and of those for Infantry Regiments by 54·7 per 1,000. A decrease in the proportion of rejections is observed among recruits for the Foot Guards of 418·6, among those for the Household Cavalry of 43·3, and of those for the Royal Artillery of 2·8 per 1,000.

The proportion of recruits is higher than in the previous year for the Royal Artillery by 34, for the Foot Guards by 18, for Departmental Corps by 11, and for the Royal Engineers by 7 per 1,000. The proportion of recruits is lower for Infantry Regiments by 45, for Cavalry of the Line by 23, and for the Household Cavalry by 2 per 1,000.

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The occupations of recruits before enlistment, the proportions rejected, and furnished by each group, are shown in the following Table :—

Occupations of Recruits.	Number Inspected.	Number Rejected at Primary Inspection.	Number Rejected at Secondary Inspection.	Total Rejected.	Ratio per 1,000 Rejected.	Proportion per 1,000 furnished by each Group of Occupations.
1. Labourers, Servants, Husbandmen, &c.	27,885	10,165	946	11,111	398·5	605
2. Manufacturing Artisans (as Clothworkers, Weavers, Lace Makers, &c.).	5,915	2,383	241	2,624	443·6	128
3. Mechanics employed in Occupations favourable to physical development (as Smiths, Carpenters, Masons, &c.).	7,701	3,032	288	3,320	431·1	167
4. Shopmen and Clerks - -	3,079	1,343	46	1,389	451·1	67
5. Professional Occupations, Students, &c.	475	209	4	213	448·4	10
6. Boys under 17 years of age -	1,009	108	22	130	128·8	22
Not stated - - - -	44	7	—	7	159·1	1
Total - - -	46,108	17,247	1,547	18,794	407·6	1,000

As compared with the results for the previous year the proportion of rejections is higher in class 5, professional occupations, students, &c., by 127·7; in class 2, manufacturing artisans, &c., by 72·2; in class 3, mechanics, by 67·3; in class 4, shopmen and clerks, by 52·2; and in class 1, labourers, &c., by 36·7 per 1,000; the proportion of rejections in class 6, boys under 17 years of age, is lower than in the previous year by 72·1 per 1,000.

In 1,000 recruits inspected, as compared with the results for the previous year, the proportion of manufacturing artisans is higher by 27, of labourers by 11, of boys under 17 years by 2, and of the professional class by 1 per 1,000; a decrease of 28 per 1,000 is observed in mechanics, and of 14 per 1,000 in shopmen and clerks.

The state of education of recruits inspected by Army Medical Officers is shown in the following Table. There is no information available on this head respecting those examined by Civil Medical Practitioners :—

—	Numbers Inspected.	Ratio per 1,000.
Unable to read - - - -	5,540	138·7
Able to read only - - - -	3,771	94·4
Able to read and write - - -	30,612	766·4
Not stated - - - -	19	·5
Total - - - -	39,942	1,000·0

As compared with the results for the previous year, an increase of recruits able to read and write is observed, amounting to 4·9 per 1,000; and a decrease of those able to read only of 4·5, and of those unable to read of ·9 per 1,000.

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Table showing the number of recruits rejected in 1880, with the causes of rejection arranged in classes, and the ratio per 1,000 in each class :— *United Kingdom.*

Causes of Rejections, in Classes.	Recruits Rejected on Primary Inspection.						Rejections on Secondary Inspection.	Total Rejections on Primary and Secondary Inspections.	
	Examined by Army Medical Officers.		Examined by Civil Medical Practitioners.		Total.				
Numbers inspected -	39,942		6,166		46,108			46,108	
	Numbers Rejected.	Ratio per 1,000 Rejected.	Numbers Rejected.	Ratio per 1,000 Rejected.	Numbers Rejected.	Ratio per 1,000 Rejected.		Numbers Rejected.	Ratio per 1,000 Rejected.
1. Syphilis - - -	399	10·00	69	11·19	468	10·15	70	538	11·67
2. Scrofula - - -	152	3·81	15	2·43	167	3·62	34	201	4·36
3. Phthisis - - -	198	4·96	23	3·73	221	4·79	17	238	5·16
4. Impaired Constitution	532	13·32	16	2·59	548	11·88	52	600	13·01
5. Other General Diseases	207	5·18	4	·64	211	4·58	64	275	5·96
6. Diseases of Nervous System.	25	·62	6	·97	31	·67	4	35	·75
7. Weakness of Intellect -	63	1·58	5	·81	68	1·47	9	77	1·67
8. Defective Vision -	1,887	47·24	185	30·00	2,072	44·94	126	2,198	47·70
9. Diseases of Eyes and Eyelids.	59	1·48	1	·16	60	1·30	9	69	1·50
10. Diseases of Nose and Mouth.	29	·72	—	—	29	·63	—	29	·62
11. Diseases of Ears -	12	·30	—	—	12	·26	3	15	·32
12. Deafness - - -	47	1·18	2	·32	49	1·06	5	54	1·17
13. Impediment of Speech	38	·95	4	·64	42	·91	4	46	·99
14. Disease of Heart -	900	22·53	106	17·20	1,006	21·82	81	1,087	23·68
15. Disease of Arteries (Aneurism).	18	·45	—	—	18	·39	—	18	·39
16. Diseases of Veins (Varix)	615	15·40	96	15·57	711	15·42	33	744	16·14
17. Disease of Lungs (except Phthisis).	87	2·18	8	1·30	95	2·06	4	99	2·15
18. Loss or Decay of many Teeth.	281	7·04	17	2·76	298	6·46	36	334	7·24
19. Hernia - -	281	7·04	53	8·60	334	7·24	28	362	7·85
20. Laxity of Abdominal Rings	143	3·58	11	1·78	154	3·34	7	161	3·49
21. Hæmorrhoids - -	137	3·43	13	2·10	150	3·25	15	165	3·58
22. Diseases of Urinary Organs.	18	·45	6	·97	24	·52	5	29	·62
23. Varicocele - -	547	13·70	139	22·54	686	14·90	56	742	16·09
24. Other Diseases of Genital Organs (not Syphilitic).	68	1·70	7	1·13	75	1·62	10	85	1·84
25. Defects of Upper Extremities, from Fracture, Contraction, Luxation, &c.	308	7·71	11	1·78	319	6·98	59	378	8·20
26. Defects of Lower Extremities, from Fracture, Contraction, Luxation, &c.	642	16·07	51	8·27	693	15·03	61	754	16·35
27. Flat Feet - -	304	7·61	31	5·02	335	7·26	50	385	8·35
28. Diseases of Joints -	74	1·85	3	·48	77	1·62	9	86	1·87
29. Other Affections of Bones and Muscles.	120	3·00	14	2·27	134	2·91	9	143	3·10
30. Ulcers, Wounds, and Cicatrices.	196	4·91	25	4·05	221	4·79	14	235	5·10
31. Other Affections of the Cutaneous System.	213	5·33	—	—	213	4·62	19	232	5·03
32. Malformation of Ears -	1	·02	—	—	1	·02	—	1	·02
33. Malformation of Nose and Mouth.	5	·12	—	—	5	·10	—	5	·10
34. Malformation of Chest and Spine.	410	10·27	59	9·57	469	10·17	57	526	11·41
35. Malformation of Urinary or Genital Organs.	20	·50	—	—	20	·43	2	22	·47
36. Marks of Punishment, or of letter D. or B.C.	9	·22	—	—	9	·19	—	9	·19
37. Under Height - -	624	15·62	18	2·92	642	13·92	60	702	15·23
38. Under Chest Measurement.	4,527	113·34	184	29·84	4,711	102·20	420	5,131	111·30
39. Under Weight (Muscular Tenuity and Debility.	1,171	29·32	129	21·00	1,300	28·20	75	1,375	29·82
40. Apparent Age not in accordance with General Order.	560	14·02	7	1·13	567	12·30	37	604	13·10
41. Not stated - -	—	—	2	·32	2	·04	3	5	·10
Total Rejected -	15,927	398·75	1,320	214·08	17,247	374·06	1,547	18,794	407·61

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In comparing the results shown in this Table with those for the previous year, it will be observed that in order to comply with recent regulations three new causes for rejection have been introduced, in consequence of recruits being "under height," "under chest measurement" and of "an apparent age not in accordance with General Orders." Of the causes of rejection hitherto recorded as "muscular tenuity and debility," and "marks of cupping, blistering, &c." the former now appears as "under weight," and the latter is included under "impaired constitution."

The proportions of total rejections on primary and secondary inspections from each cause differ only slightly from those given in the returns for the previous year.

On comparing, however, the proportions of rejections from each cause by Army Medical Officers and by Civil Medical Practitioners, the greater attention devoted to the chest measurement by the former is shown by the proportion of rejections for defective chest measurement by Army Medical Officers having been 113·34 per 1,000, and by Civil Medical Practitioners having been only 29·84 per 1000.

Of recruits "under height" Army Medical Officers rejected 15·62, and Civil Medical Practitioners only 2·92 per 1,000. Of recruits also, whose apparent age was not in accordance with General Order, Army Medical Officers rejected 14·02, and Civil Medical Practitioners only 1·13 per 1,000. In other respects there is no very striking difference in the respective proportions of rejections from each cause by Army Medical Officers and Civil Medical Practitioners.

Ages, Heights, and Weights of Recruits.

Table showing the ages of all recruits, as given at their primary inspection, and the proportion per 10,000 at each age:—

Ages.	Numbers Inspected.			Proportion in 10,000.		
	By Army Medical Officers.	By Civil Medical Practitioners.	Total.	Inspected by Army Medical Officers.	Inspected by Civil Medical Practitioners.	Total.
Boys under 17 years	1,068	63	1,131	267	102	245
From 17 to 18 „	1,363	23	1,386	341	37	301
„ 18 to 19 „	10,163	1,866	12,029	2,545	3,026	2,609
„ 19 to 20 „	7,949	1,308	9,257	1,990	2,121	2,008
„ 20 to 21 „	5,175	815	5,990	1,296	1,322	1,299
„ 21 to 22 „	3,849	552	4,401	964	895	955
„ 22 to 23 „	3,237	495	3,732	810	803	809
„ 23 to 24 „	3,022	406	3,428	757	659	743
„ 24 to 25 „	3,019	559	3,578	756	907	776
25 years and upwards	1,097	72	1,169	274	117	254
Not stated - -	—	7	7	—	11	1
Total -	39,942	6,166	46,108	10,000	10,000	10,000

The proportion of boys under 17 years, of recruits from 17 to 18, 18 to 19, and of 25 years and upwards, is higher than for the previous year, but lower at all other ages in the Table.

Omitting "boys under 17," also the 7 recruits whose ages are not stated, the total number of recruits whose ages are given is 44,970, with a total number of years of age of 904,232, giving as the average age of recruits for the year 20·11 years, which is less than the average age of recruits for the previous year by ·21.

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Table showing the heights of all recruits, taken at their primary inspection, and the proportion per 10,000 at each height:— *United Kingdom.*

Heights.	Numbers Inspected.			Proportion per 10,000.		
	By Army Medical Officers.	By Civil Medical Practitioners.	Total.	Inspected by Army Medical Officers.	Inspected by Civil Medical Practitioners.	Total.
ft. in. ft. in.						
Under 5 3 -	923	56	979	237	91	217
5 3 to 5 4 -	424	9	433	109	14	96
5 4 to 5 5 -	3,730	186	3,916	960	302	870
5 5 to 5 6 -	9,585	1,559	11,145	2,466	2,531	2,475
5 6 to 5 7 -	8,918	1,823	10,741	2,294	2,960	2,385
5 7 to 5 8 -	6,557	1,206	7,763	1,687	1,958	1,724
5 8 to 5 9 -	4,340	705	5,045	1,116	1,145	1,120
5 9 to 5 10 -	2,544	377	2,921	654	612	649
5 10 to 5 11 -	1,080	142	1,222	278	231	271
5 11 to 6 0 -	488	56	544	126	91	121
6 0 and upwards	285	40	325	73	65	72
	38,875	6,159	45,034	10,000	10,000	10,000
Not stated* -	1,067	7	1,074	—	—	—
Total -	39,942	6,166	46,108	—	—	—

* *Note.*—At certain stations, the regulation standards for measurement not having been supplied, the heights of 1,067 recruits inspected by Army Medical Officers were not recorded.

Compared with the returns for the previous year an increase is observed of 321 recruits between 5 feet 5 inches and 5 feet 6 inches, of 227 between 5 feet 4 inches and 5 feet 5 inches, of 43 between 5 feet 3 inches and 5 feet 4 inches, and of 38 under 5 feet 3 inches among 10,000 recruits inspected. A decrease is observed of 355 recruits between 5 feet 6 inches and 5 feet 7 inches, of 112 between 5 feet 7 inches and 5 feet 8 inches, of 71 between 5 feet 8 inches and 5 feet 9 inches, of 9 between 5 feet 9 inches and 5 feet 10 inches, of 21 between 5 feet 10 inches and 5 feet 11 inches, of 26 between 5 feet 11 inches and 6 feet, and of 24 of 6 feet and upwards among 10,000 recruits inspected.

Table showing the weights of 25,766 recruits inspected by Army Medical Officers, and the proportion per 10,000 at each weight. There is no information of this kind available respecting 6,166 recruits primarily inspected by Civil Medical Practitioners, and 14,176 recruits inspected by Army Medical Officers at certain stations at which the standard scales and weights had not been supplied.

Weights.	Numbers Weighed.	Proportion per 10,000.
Under 100 lbs. - - - -	663	257
100 lbs. to 110 lbs. - - - -	385	149
110 „ to 120 „ - - - -	2,347	911
120 „ to 130 „ - - - -	7,131	2,768
130 „ to 140 „ - - - -	7,622	2,958
140 „ to 150 „ - - - -	4,685	1,818
150 „ to 160 „ - - - -	1,935	751
160 „ to 170 „ - - - -	734	285
170 „ and upwards - - -	264	103
Total - - - -	25,766	10,000

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Compared with the returns for the previous year, an increase is observed of 231 recruits from 110 lbs. to 120 lbs., of 55 from 100 lbs. to 110 lbs., and of 70 under 100 lbs. among 10,000 recruits whose weights have been recorded; a decrease is observed of 8 recruits from 120 lbs. to 130 lbs., of 27 from 130 lbs. to 140 lbs., of 83 from 140 lbs. to 150 lbs., of 117 from 150 lbs. to 160 lbs., of 79 from 160 lbs. to 170 lbs., and of 42 of 170 lbs. and upwards among 10,000 recruits whose weights have been recorded.

In the following Tables are arranged, in series according to age, the several weights of 25,766 recruits inspected by Army Medical Officers, and the heights of 45,034 recruits inspected by Army Medical Officers and Civil Medical Practitioners massed together.

The proportions per 10,000 of each weight and height at each age are also given.

The highest proportion per 10,000 at any age and weight is 3,934 among recruits at the age between 18 and 19 years, and at the weight between 120 and 130 lbs., this proportion is lower by 374 than the similar highest proportion for the previous year, the limits of age and weight in each year being the same.

The highest proportion per 10,000 at any age and height is 3,077, among recruits at the age between 18 and 19 years and at the height between 5 feet 5 inches and 5 feet 6 inches. In the returns for the previous year the highest proportion per 10,000 was 3,285 of recruits at the age between 18 and 19 years and at the height between 5 feet 6 inches and 5 feet 7 inches.

Weights of Recruits Inspected by Army Medical Officers.	Boys under 17 Years.	Between 17 and 18.	Between 18 and 19.	Between 19 and 20.	Between 20 and 21.	Between 21 and 22.	Between 22 and 23.	Between 23 and 24.	Between 24 and 25.	25 Years and upwards.	Totals at each Weight.
Under 100 lbs. -	658	2	—	2	—	1	—	—	—	—	663
100—110 lbs. -	91	57	128	49	21	10	9	7	9	4	385
110—120 „ -	39	175	896	582	233	144	94	76	80	28	2,347
120—130 „ -	19	245	2,509	1,679	903	584	423	312	307	150	7,131
130—140 „ -	7	136	1,819	1,713	1,144	843	640	566	528	226	7,622
140—150 „ -	3	73	720	897	732	550	478	535	505	192	4,685
150—160 „ -	—	20	210	270	242	287	265	283	251	107	1,935
160—170 „ -	1	10	86	89	99	92	96	95	122	44	734
Upwards of 170 lbs.	—	1	10	30	42	31	27	36	52	35	264
Totals at each age	818	719	6,378	5,311	3,416	2,542	2,032	1,910	1,854	786	25,766

Weights of Recruits Inspected by Army Medical Officers.	Proportions per 10,000 of each Age at each Weight.										Total Proportion per 10,000 at each Weight.
	Boys under 17 Years.	Between 17 and 18.	Between 18 and 19.	Between 19 and 20.	Between 20 and 21.	Between 21 and 22.	Between 22 and 23.	Between 23 and 24.	Between 24 and 25.	25 Years and upwards.	
Under 100 lbs. -	8,044	28	—	3	—	4	—	—	—	—	257
100—110 lbs. -	1,113	793	201	92	61	39	44	37	48	51	149
110—120 „ -	477	2,434	1,405	1,096	682	566	463	398	432	356	911
120—130 „ -	232	3,408	3,934	3,162	2,644	2,298	2,082	1,634	1,656	1,909	2,768
130—140 „ -	86	1,892	2,852	3,226	3,349	3,316	3,150	2,963	2,848	2,875	2,958
140—150 „ -	36	1,015	1,129	1,689	2,143	2,164	2,352	2,801	2,724	2,443	1,818
150—160 „ -	—	278	329	508	708	1,129	1,304	1,482	1,354	1,361	751
160—170 „ -	12	139	135	168	290	362	472	497	658	560	285
Upwards of 170 lbs.	—	13	15	56	123	122	133	188	280	445	103
Total -	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

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Heights of Recruits on Inspection by Army Medical Officers, and on Primary Inspection by Civil Medical Practitioners.	Boys under 17 Years.	Between 17 and 18.	Between 18 and 19.	Between 19 and 20.	Between 20 and 21.	Between 21 and 22.	Between 22 and 23.	Between 23 and 24.	Between 24 and 25.	25 Years and upwards.	Totals at each Height.
ft. in. ft. in.											
Under 5 3 - {	898	1	6	6	5	1	2	—	2	2	} 979
	54	1	—	1	—	—	—	—	—	—	
5 3 to 5 4 - {	63	48	77	102	45	35	28	19	5	2	} 433
	5	1	1	1	—	—	—	—	—	1	
5 4 to 5 5 - {	31	256	1,017	918	486	350	253	224	167	28	} 3,916
	—	4	71	55	22	14	7	10	3	—	
5 5 to 5 6 - {	20	358	3,030	1,975	1,277	899	674	580	541	232	} 11,145
	2	7	591	341	231	117	102	76	83	9	
5 6 to 5 7 - {	15	316	2,565	1,803	1,180	819	683	658	662	217	} 10,741
	—	5	594	401	226	164	147	108	158	20	
5 7 to 5 8 - {	7	131	1,604	1,282	895	630	627	545	619	217	} 7,763
	—	—	338	251	153	105	114	100	126	19	
5 8 to 5 9 - {	4	128	917	785	521	480	426	438	408	173	} 5,045
	2	2	161	142	90	80	65	61	91	11	
5 9 to 5 10 - {	—	65	444	492	321	298	246	303	279	96	} 2,921
	—	—	78	79	59	40	33	33	50	5	
5 10 to 5 11 - {	1	15	147	157	154	151	119	130	143	63	} 1,222
	—	3	18	24	22	24	12	8	28	3	
5 11 to 6 0 - {	1	14	62	90	75	55	60	43	57	31	} 544
	—	—	10	6	8	10	8	4	12	2	
6 0 and upwards {	—	5	33	40	54	32	29	38	35	19	} 325
	—	—	4	7	4	2	7	6	8	2	
Totals at each age and height }	1,103	1,360	11,768	8,958	5,828	4,302	3,642	3,384	3,537	1,152	45,034
Heights not stated: By Army Medical Officers.	—	—	—	—	—	—	—	—	—	—	1,067
Civil Medical Practitioners.	—	—	—	—	—	—	—	—	—	—	6
Height and age not stated: By Civil Medical Practitioners.	—	—	—	—	—	—	—	—	—	—	1
											1,074
Total -	—	—	—	—	—	—	—	—	—	—	46,108

Heights of Recruits on Inspection by Army Medical Officers and on Primary Inspection by Civil Medical Practitioners.	Proportions per 10,000 of each Age at each Height.										Total Proportion per 10,000 at each Height.
	Boys under 17 Years.	Between 17 and 18.	Between 18 and 19.	Between 19 and 20.	Between 20 and 21.	Between 21 and 22.	Between 22 and 23.	Between 23 and 24.	Between 24 and 25.	25 Years and upwards.	
ft. in. ft. in.											
Under 5 3 -	8,631	15	5	8	8	2	5	—	5	17	217
5 3 to 5 4 -	617	360	66	115	77	81	76	56	14	26	96
5 4 to 5 5 -	281	1,912	925	1,086	872	846	714	691	481	243	870
5 5 to 5 6 -	200	2,684	3,077	2,586	2,588	2,362	2,131	1,939	1,764	2,092	2,475
5 6 to 5 7 -	136	2,360	2,685	2,461	2,413	2,285	2,279	2,264	2,318	2,057	2,385
5 7 to 5 8 -	63	963	1,650	1,711	1,798	1,709	2,035	1,906	2,106	2,049	1,724
5 8 to 5 9 -	54	956	916	1,035	1,049	1,302	1,349	1,475	1,581	1,598	1,120
5 9 to 5 10 -	—	478	444	637	652	786	766	993	930	877	649
5 10 to 5 11 -	9	132	140	202	302	407	360	408	484	573	271
5 11 to 6 0 -	9	103	61	107	142	141	187	138	195	286	121
6 0 and upwards	—	37	31	52	99	79	98	130	122	182	72
Total -	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

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On the Influence of Age on the Mortality of the Troops serving in the United Kingdom.

The rates of mortality at different ages (arranged in quinquennial periods), in the several arms of the service, are shown in the following Table:—

Arms of the Service.	Annual Ratio of Deaths per 1,000 Living, at the following Ages:—					
	Under 20.	20 and under 25.	25 and under 30.	30 and under 35.	35 and under 40.	40 and upwards.
Household Cavalry - -	—	2·36	8·88	—	24·19	54·05
Cavalry - - -	1·83	4·41	5·62	6·85	21·39	5·46
Royal Artillery - -	2·64	5·06	6·24	12·35	14·24	21·70
Royal Engineers - -	—	2·39	2·78	12·68	8·11	12·34
Foot Guards - - -	6·18	5·91	6·45	11·32	19·94	9·35
Infantry - - -	2·80	4·13	5·09	9·47	18·05	15·75
Brigade Depôts - -	3·93	8·82	9·13	10·95	15·95	27·10
Garrison, Staff, and Departmental Corps.	—	2·27	7·16	6·59	27·17	35·90
Average of all Troops at Home	3·00	4·80	5·75	10·23	15·99	21·92
Ditto ditto 1870–79	3·11	5·08	6·18	11·64	17·28	24·09
*Civil Male Population { England and Wales	6·89	8·67	9·55	10·37	11·96	13·96
*Civil Male Population { Healthy Districts -	5·83	7·30	7·93	8·36	8·96	9·86

* The ratio of mortality of males in the civil population under 20 has been calculated for the ages of 17–20, and that of 40 and upwards for the ages 40–45. The data for England and Wales have been obtained from Dr. Farr's English Life Table, published by authority of the Registrar General in 1864, and for Healthy Districts, from Dr. Farr's Healthy District Life Table, published in the 33rd Annual Report of the Registrar General.

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III.—ON THE HEALTH OF THE TROOPS SERVING IN THE MEDITERRANEAN.

Sickness and Mortality.

I.—Gibraltar.

STATISTICAL REPORT.

Gibraltar.

The average annual strength of the non-commissioned officers and men was 4,483; the admissions into hospital amounted to 3,309, and the deaths (including those of invalids who died on the passage or after arrival at home) were 19. The average number constantly sick was 196·84; invalids sent home 156. These numbers give as the annual rates per 1,000 admissions 738·1, deaths 4·24, constantly sick 43·91, invalids 34·80. As compared with the previous year, these rates present the following results: admissions per 1,000 less by 148·1, deaths by 5·72, and constantly sick less by 5·95, invalided less by 39·36.

The following changes occurred in the garrison. The arrival of the 30th Company Royal Engineers and the 2nd Battalion 24th Regiment on 12th February, the 46th Regiment on 5th March, 41st Regiment on 11th August, 13th and 14th Batteries 10th Brigade Royal Artillery on 18th October, the 21st and 32nd Companies Royal Engineers and the 97th Regiment on 12th December, and the 3rd Battery 10th Brigade Royal Artillery on 13th December. The departure of the 2nd Battalion 23rd Regiment on 14th February, the 71st Regiment on the 8th March, the 2nd Battalion 24th Regiment on the 11th August, the head-quarters 7th Brigade Royal Artillery on the 19th October, the the 3rd and 8th Companies Royal Engineers and the 2nd Battalion Rifle Brigade on the 14th December, and the 97th Regiment on the 26th December.

The corps which served at Gibraltar during the year, and some of the most important of their health statistics are shown in Abstract No. XLII. The 41st Regiment shows the highest rates of admissions, deaths, average daily sick, and average sick time to each soldier. The prevailing diseases were fevers and venereal diseases. The 46th Regiment shows a comparatively high rate of admissions, invaliding, average daily sick, and average sick time to each soldier. The health of the 71st Highland Light Infantry shows remarkable improvement, as compared with its condition during the previous year. The admission rate is lower by 956·2 per 1,000. There were no deaths; the rate for the previous year having been 10·42 per 1,000. The rate of invaliding is lower by 59·86, and the average daily sick rate by 36·07 per 1,000.

The Principal Medical Officer observes:—"The 2nd Battalion Rifle Brigade, "which at the date of its departure in December had been longer on the "station than any other corps, maintained to the last the reputation of being "the most healthy corps on the Rock."

The Garrison Staff and the Army Service Corps give high death rates, and the Army Hospital Corps a very high rate of invaliding; these results, however, would be misleading if the small strength be not considered.

The classes and orders of diseases by which the sickness and mortality of the Command were caused are shown in Abstract No. II.

General Diseases.—The admission and death rates for this class are respectively lower than the corresponding rates for the previous year by 208·1 and 3·97 per 1,000. The admission rate in the *febrile group* is lower by 253·2, and in the *constitutional group* is higher by 45·1 per 1,000 than in the previous year. The death rate in the *febrile group* is lower by 3·09, and in the *constitutional group* by ·88 per 1,000 than in the previous year.

Eruptive Fevers.—One case of small-pox occurred in January. The patient bore marks of vaccination; the case was mild, and terminated in recovery.

Continued Fevers.—The admission and death rates are higher than in the previous year by 37·0 and ·23 per 1,000 respectively. Enteric fever caused 5

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Gibraltar. admissions, namely, 3 in the 2nd Battalion 24th Regiment, 1 in 2nd Battalion Rifle Brigade, and 1 in the Army Service Corps. The deaths were 2, namely, 1 in the 2nd Battalion 24th Regiment, on the 8th of March, and 1 in the Army Service Corps on the 19th of February. The patients had respectively been only three weeks and seven days at the station, which therefore cannot fairly be considered responsible for the circumstances under which the cases occurred. In the other three cases the symptoms were by no means typical, and the Principal Medical Officer remarks that perhaps they might more correctly have been returned under the head of simple continued fever.

Simple continued fever caused 395 admissions and 3 deaths, and febricula 195 admissions. The cases were most frequent during the five months from July to November inclusive; 1 death occurred in July, 1 in October, and 1 in November. The influence of recent arrival in inducing receptivity to this form of fever was apparent in the greater prevalence of the disease among the men of the 41st and 46th Regiments. The position of the barracks occupied by these corps—the 41st in the "Casemates" and the 46th at "Europa"—in the extreme north and south of the Rock respectively, both being much exposed to the prevailing winds, particularly the easterly, rendered the men when heated by exercise very liable to sudden chills, to be followed not long afterwards by attacks of Rock fever. Relapses were very common, and convalescence protracted and frequently accompanied by non-inflammatory rheumatic or neuralgic pains in the muscles and tendons, but seldom in the joints.

There were only 11 admissions from paroxysmal fevers as compared with 1,320 during the previous year, the admission rate being 2·5 as compared with 292·3 per 1,000. No deaths occurred, the number during the previous year having been 15, or 3·32 per 1,000. The cases were 5 of ague and 6 of remittent fever. The marked reduction in the total rates of admissions and deaths from fevers is entirely attributable to the departure of the 42nd Highlanders and 71st Highland Light Infantry, who had suffered so severely during 1879 from malarial fevers contracted in Cyprus.

Other Diseases.—The cases included under this heading were 3 of influenza, 2 of erysipelas, and 2 of mumps. No deaths occurred.

Rheumatism.—The admission rate is lower by 5·7 per 1,000 than that of the previous year. The cases were 29 acute, 43 chronic, and 151 muscular; the ailment under the two latter heads being almost without exception connected with a previous attack of Rock fever. Acute inflammatory symptoms and cardiac affections were not sequelæ of this disease.

Syphilis.—The total rates of admissions and of constantly sick from the primary and secondary forms of this disease exceed the corresponding rates for the previous year by 53·2 and 4·52 per 1,000 respectively. The admissions from primary syphilis were in the ratio of 85·7, and from secondary syphilis 6·7 per 1,000; the ratio of constantly sick from the former was 7·96, and from the latter ·38 per 1,000. The worst cases were admitted from the 97th Regiment, which landed from Halifax, N.S., on the 12th December.

Tubercular Diseases.—The total number of admissions under this heading was 24, and of deaths 2, giving the respective rates 5·3 and ·45 per 1,000, which are lower than the corresponding rates for the previous year by 1·1 and ·88 per 1,000 respectively. The admissions were scrofula 2, phthisis pulmonalis 14, and tubercular hæmoptysis 8. The deaths were from phthisis pulmonalis, 2.

Scurvy and Purpura.—The admission rate, ·7 per 1,000, is identical with that of the previous year. No death occurred.

Other Diseases.—No admissions occurred, but one death of an invalid after arrival in England was caused by cancer of the liver.

Local Diseases.—*Diseases of the Nervous System.*—The admission rate is almost identical with that for the previous year, the death rate is exactly half, and the invaliding rate slightly more than double that for the previous year. The principal causes of admission were neuralgia, insanity, and epilepsy. One case of apoplexy terminated fatally.

Diseases of the Eye.—The admission rate exceeds that for the previous year by 1·7 per 1,000. The most frequent ailments were conjunctivitis 36 cases, tarsal ophthalmia 8, and retinitis 7.

Diseases of the Ear.—The admission rate is lower than that for the previous year by 4 per 1,000.

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Diseases of the Circulatory System.—The admission and death rates are lower than the corresponding rates for the previous year by 1·1 and ·45 per 1,000 respectively, while the rate of invaliding is higher by 1·80 per 1,000. The cases were varix 12, hypertrophy of heart 7, valvular disease 6, palpitation 4, and aneurism of aorta, 2. One case of the last named disease terminated fatally. One death from valvular disease occurred out of hospital, and one invalid died at Netley from aneurism of the aorta. *Gibraltar.*

Diseases of the Respiratory System.—As compared with the previous year a decrease is apparent in the admission rate of 1·8, death rate 1·32, and invaliding rate 2·42 per 1,000. Bronchitis caused 143 admissions, pneumonia 9, pleurisy 8, asthma 5, and pulmonary extravasation 1. One death was caused by pneumonia, and 1 by pleurisy.

Diseases of the Digestive System.—The admission rate exceeds that for the previous year by 18·4, and the death rate is ·22 as compared with *nil* during the previous year; the invaliding rate is less by 2·42 per 1,000. The chief causes of admissions were dyspepsia 152, tonsillitis 80, diarrhœa 47, jaundice 22, colic 17, hæmorrhoids 14, simple enlargement of liver 12, tænia solium 8, fistula in ano 7, hernia 7, hepatitis 6. One death was caused by strangulated hernia through exhaustion after reduction.

Diseases of the Urinary System.—The total admission rate under this heading exceeds that for the previous year by 41·0 per 1,000. Gonorrhœa caused an increase of 38·7 per 1,000; the sequelæ of gonorrhœa show a decrease of 4·6 per 1,000, and other diseases an increase of 6·9 per 1,000. Gonorrhœa caused 337 admissions, and its sequelæ 20, namely, epididymitis 14, phimosis and paraphimosis 5, bubo 1. Under the term "other diseases" are included balanitis 17, stricture of urethra 16, incontinence of urine 4, Bright's disease 2, hæmaturia 1, cystitis 1, and inflammation of prostate gland 1. One death was caused by Bright's disease.

Diseases of the Generative System.—The rate of admissions is higher by 9 per 1,000 than that for the previous year. The cases were orchitis,—non-gonorrhœal 79, hydrocele 3, hæmatocele 2, and varicocele 2. The orchitis in many instances accompanied or rapidly followed attacks of Rock fever.

Diseases of the Cellular Tissue.—The admission rate is higher than that for the previous year by 3·9 per 1,000. The cases were inflammation 66, abscess 58.

Diseases of the Cutaneous System.—The admission rate exceeds that of the previous year by 4·3 per 1,000. The cases were chiefly ulcer, boils, eczema, itch, and warts.

Conditions.—*General Debility.*—The admission rate is lower than that for the previous year by 3·0 per 1,000. No deaths occurred during either year. The invaliding rate is higher by 1·80 per 1,000.

Poisons.—The rate of admissions is lower than that for the previous year by 10·4 per 1,000. The cases were alcoholic poisoning 11, delirium tremens 7. No deaths occurred during either year.

Injuries.—No admissions or deaths occurred under the heading of *general injuries.* The death rate during the previous year was ·44 per 1,000. The admission and death rates from *local injuries* exceed those for the previous year by 9 5 and ·45 per 1,000 respectively. Of the total number of cases, 368, contusions caused 119, wounds 105, sprains 98, fractures 19, burns and scalds 11, blisters of feet 6, dislocations 5, cut throat 3 *self-inflicted*—of which two occurred in the same man—concussion of brain 1, and gun shot 1.

The gun shot wound was from splinters of a bullet at the rifle butts, and was not of serious nature. One death was caused by fracture of skull, the result of a fall from a horse, one by cut throat, and one—out of hospital—by gun shot wound. The injuries in the two latter cases were *self-inflicted.*

Surgical Operation.—Only one, amputation of the index finger in consequence of contusion, was performed during the year.

Officers.

In an average annual strength of 163 officers, there were 79 cases of illness, 2 died, and 15 were invalided to England. The admission rate, 484·6, is lower than that for the previous year by 200·2 per 1,000; the death rate, 12·27, is higher by ·15, and the invaliding rate, 92·02, higher by 37·48 per

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Gibraltar.

1,000. Simple continued fevers and febricula, rheumatism, and tonsillitis were the most frequent causes of admission, and fevers of invaliding. Enteric fever caused one admission and one death, as did also pneumonia.

Women.

In an average strength of 299 women, there were 199 cases of sickness and 3 deaths. The admission rate, 665·5 per 1,000, exceeds that for the previous year by 118·5, and the death rate, 10·03 per 1,000, is lower by 1·73. The chief causes of admission were fevers, simple continued and remittent, general debility, and rheumatism. The three deaths resulted respectively from dropsy, hernia, and asphyxia by hanging.

Children.

In an average strength of 591 children, there were 243 cases of sickness and 16 deaths, being in the respective annual ratios of 411·2 and 27·07 per 1,000. Compared with the previous year, the former is lower by 19·8, and the latter by 15·13 per 1,000. The prevailing diseases were diarrhœa 47, bronchitis 38, simple continued fevers and febricula 32, teething 20, and whooping cough 7. Scarlet fever and measles respectively caused one admission. The deaths were caused by—convulsions 5, teething 3, bronchitis 2, diarrhœa 2, simple continued fever 1, whooping cough 1, general debility 1, and premature birth 1.

Invaliding.

The number of non-commissioned officers and men invalided to England was 156, of whom 59 were recommended for discharge from the service, and 97 for change of climate. The invaliding rate, 34·80 per 1,000, is lower than that for the previous year by 39·36. The principal causes of invaliding were —general debility 36, rheumatism 19, tubercular diseases 15, diseases of the circulatory system 20, respiratory 13, of the eye 10, of the nervous system 7, digestive 5, and other local diseases 17.

Mean Daily Sick.

The average number constantly sick, 196·84, gives in the average strength of 4,483 the ratio of 43·91 per 1,000, which is lower than that for the previous year by 5·95 per 1,000. The average sick time to each soldier, 16·07 days, is lower than the average for the previous year by 2·13 days. The average duration of each case of sickness, 21·77 days, exceeds the average for the previous year by 1·23 days.

II.—Malta.

Statistical Report.

Malta.

In an average strength of 4,885 non-commissioned officers and men, exclusive of the Royal Malta Fencible Artillery, there were 4,187 admissions into hospital and 49 deaths (including those of three invalids during their passage to, or after their arrival in England), and the average number of daily sick was 227·45. The annual rates per 1,000 men on the numbers above given are, for admissions 857·1, deaths 10·02, and constantly sick 46·56. Compared with the previous year the admission rate is lower by 15·4 per 1,000, the death rate higher by 1·67, and the constantly sick rate higher by ·08.

The garrison of Malta was composed of Royal Artillery and Royal Engineers, the 1st Battalion 1st, and 2nd Battalion 10th Regiments, one wing 1st Battalion 20th Regiment, and the 35th Regiment throughout the entire year; the 26th and 38th Regiments arrived from England on 18th and 19th August, and the other wing 1st Battalion 20th Regiment, from Cyprus on 11th October; the 61st and 98th Regiments left for India between 19th August and 1st September; five companies of 35th Regiment for Cyprus on 30th September; and the 13th and 14th Batteries 10th Brigade Royal Artillery on 13th October for Gibraltar; detachments of the Army Service and Army Hospital Corps, the

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men of the garrison and departmental staffs and attached men completed the strength for the year. Some of the most important of the health statistics of those corps are shown in Abstract No. XLII. The admission rates of the 26th and 38th Regiments, 1375·0 and 1161·6 per 1,000 respectively are higher than those of any other corps in the Command, and are accounted for by these Regiments having arrived during the hottest part of the year, the diseases, however, were of mild type. The death rates of the Royal Engineers and of the 35th Regiment, 22·22 and 20·91 per 1,000 respectively, are higher than those of any other corps in the Command; the former includes the death of one invalid, and the latter is augmented by five deaths caused by enteric fever alone. The lowest admission rate, 688·6 per 1,000, occurred in the 2nd Battalion 10th Regiment, and the lowest death rate, 3·05 per 1,000, in the 38th Regiment. *Malta.*

The sickness and deaths under each class and order of diseases are shown in Abstract No. III.

General Diseases.—The total admission rate under this heading, 285·0 per 1,000, is lower than the corresponding rate for the previous year by 24·3, a decrease of 12·0 per 1,000 having occurred in the *febrile*, and of 12·3 in the *constitutional* group. The total death rate, 6·14 per 1,000, exceeds the corresponding rate for the previous year by 1·85, an increase of 1·73 having occurred in the *febrile* and of ·12 in the *constitutional* group.

Eruptive Fevers caused 17 admissions and one death, giving the respective rates of 3·5 and ·20 per 1,000, the former exceeds the corresponding rate for the previous year by 2·4 per 1,000, and the latter by ·20 per 1,000 as compared with *nil*. The cases were small-pox 2, and measles 15. The death was from small-pox.

Continued Fevers caused 900 admissions and 18 deaths, giving the respective rates of 184·2 and 3·69 per 1,000, the former is lower and the latter is higher than the corresponding rate for the previous year by 25·3 and 1·12 per 1,000 respectively. The cases were enteric fever 53, simple continued fever 20, and febricula 827. The deaths were, from enteric fever 17, and from simple continued fever 1.

The admission and death rates from enteric fever, 10·8 and 3·49 per 1,000 respectively, exceed the corresponding rates for the previous year by ·1 and ·92 per 1,000. Cases of enteric fever occurred during each month, but chiefly in the latter half of the year, 42 of the 53 cases having occurred between July and December; of the 17 deaths, 11 occurred during the same period, 3 deaths in June, none in April or May, and 1 in each month of the first quarter; no death in November.

The admission rate from simple continued fever and febricula, 173·4 per 1,000, is lower than that for the previous year by 25·4; the death rate, ·20 per 1,000, shows an increase as compared with *nil* during the previous year.

Parozysmal Fevers caused 60 admissions and 2 deaths, giving the respective rates of 12·3 and ·41 per 1,000, the former rate is higher than that for the previous year by 10·0 per 1,000, and the latter shows an increase as compared with *nil*. The increase in this class of fevers is attributed by the Principal Medical Officer to the arrival during October of the half battalion 1/20th Regiment from Cyprus, nearly all the cases having occurred in that corps.

Other Diseases.—Influenza caused 34, and erysipelas 7 admissions included under this heading; the rate per 1,000 is 8·4. No death occurred.

Rheumatism caused 163 admissions, giving the annual rate of 33·4 per 1,000, which is lower than the corresponding rate for the previous year by 3·7. No death occurred, as compared with ·43 per 1,000 during the previous year.

Syphilis.—The primary form caused 108 admissions and the secondary 64, the respective rates per 1,000 being 22·1 and 13·1, the former is lower than that for the previous year by 15·4, and the latter higher by 7·1. The total admission rate, 35·2 per 1,000, is lower than that for the previous year by 8·3. No death occurred.

Tubercular Diseases.—In this class 38 admissions and 8 deaths, including the death of an invalid, give an annual admission rate of 7·8 and death rate of 1·64 per 1,000, which exceed the corresponding rates for the previous year by 3·1 and ·35 respectively. The cases were phthisis pulmonalis 32, tubercular hæmoptysis 5, and tubercular meningitis 1. The deaths were from phthisis pulmonalis 7, and tubercular meningitis 1.

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Malta.

Other Diseases.—Cancer caused one admission in the Command and the death of an invalid in England.

Local Diseases.—*Diseases of the Nervous System* caused 53 admissions and 3 deaths, giving the annual rates of 10·9 and ·62 respectively per 1,000, the former is lower than that for the previous year by 2·8 and the latter higher by ·41. The principal causes of admission were, neuralgia 10, mania 10, dementia 10, sciatica 5, epilepsy 4, epileptic vertigo 3. The deaths were 2 from apoplexy out of hospital, and 1 from embolism of the cerebral arteries.

Diseases of the Eye.—The admission rate, 25·6 per 1,000, is higher than that for the previous year by 5·5. Conjunctivitis caused 91 in the total of 125 cases.

Diseases of the Circulatory System caused 40 admissions and 5 deaths, including the death of an invalid; the admission rate, 8·2 per 1,000, is lower than that for the previous year by 6·8, and the death rate 1·02 is lower by ·05. The chief causes of admission were, palpitation 26, valvular disease 7, varix 5. The deaths were from dropsy of pericardium 1, valvular disease 1, rupture of left auricle 1, hypertrophy 1 (out of hospital), and aneurism of aorta 1, the last named being the death of an invalid in England.

Diseases of the Respiratory System.—The admissions from this class of disease were 222 with 1 death, giving the annual rates of 45·4 and ·20 per 1,000 respectively, the former exceeds the corresponding rate for the previous year by 5·1, and the latter is lower by ·87. The chief causes of admission were, bronchitis 141, bronchial catarrh 43, pleurisy 20, and pneumonia 13. The death was caused by pneumonia.

Diseases of the Digestive System.—The admissions amounted to 732 and the deaths to 3, giving the respective annual rates of 149·9 and ·62 per 1,000; compared with the corresponding rates for the previous year the former is lower by 16·1 and the latter higher by ·19 per 1,000. The chief causes of admission were, dyspepsia 243, diarrhœa 146, tonsillitis 99, tænia solium 63, sore throat 22, ulcerated throat 17, hæmorrhoids 33, hepatitis 22, dysentery 11. The deaths were 1, respectively, from jaundice, abscess of liver, and enteritis, the last named having occurred out of hospital.

Diseases of the Urinary System.—The admissions were from gonorrhœa 358, sequelæ of gonorrhœa—chiefly gleet and stricture—42, and other diseases —chiefly balanitis 35, giving a total of 435. Compared with the corresponding rates for the previous year the rate for gonorrhœa is higher by 34·7 per 1,000, or nearly double; for the sequelæ of gonorrhœa it is lower by ·6 per 1,000, or almost identical, and for other diseases higher by 3·5, or nearly double. No death occurred.

Diseases of the Generative System caused 54 admissions and no death. The admission rate, 11·1 per 1,000, is lower than that for the previous year by ·7. The cases were, orchitis 47, hydrocele 5, varicocele 1, and œdema of scrotum 1.

Diseases of the Organs of Locomotion.—The admissions amounted to 41, giving the annual rate of 8·4 per 1,000, which is higher than that for the previous year by 1·7. The chief cases were, synovitis 24, bursal abscess 4, enlarged bursa patellæ 3. No death occurred.

Diseases of the Cellular Tissue.—Admissions 137. No death. The admission rate, 28·0 per 1,000, is higher than that for the previous year by 1·2. The cases were 77 of abscess and 59 of inflammation, and 1 case of œdema of leg.

Diseases of the Cutaneous System.—Cases 370, giving the annual admission rate of 75·7 per 1,000, which exceeds that for the previous year by 13·8. The chief cases were ulcer 114, eczema 58, boil 56, itch 25, whitlow 17, warts 15, psoriasis 14.

Conditions, &c.—*Debility.*—Admissions 95, death 1, giving the respective annual ratios of 19·4 and ·20 per 1,000, the former is less than that for the previous year by 1·6, and the latter contrasts with *nil.*

Poisons.—Two cases of delirium tremens give the annual rate of ·4 per 1,000, which is less than that for the previous year by 1·3. No death occurred.

Injuries.—The cases returned as *general injuries* were, burns 1, multiple injury 1, the *local injuries* amounted to 431, the principal being sprain 149, wounds 122, contusion 98, blisters of feet 32, fracture 16, burns and scalds 5,

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dislocation 4. Three wounds were *self-inflicted*, two cut throat during mania and intoxication respectively, and one of slight nature by an insane soldier, site not specified. The patients all recovered from the wounds. One death by accidental drowning is returned under *general injuries*; the deaths from *local injuries* were from fracture 1, wound 1, *self-inflicted* out of hospital, *cut throat* 1 *and gun-shot wound* 2. The admission and death rates from *general injuries* are lower than those for the previous year by 1·5 and ·87 per 1,000 respectively. The admission rate from *local injuries* 83·2 per 1,000 is lower than that for the previous year by 22·6, while the death rate, 1·02 per 1,000, is higher by ·81. *Malta.*

Surgical operations.—Only two minor operations for the removal of injured toes were performed, the result in each case was satisfactory.

Officers.

The average strength was 182, among whom occurred 130 cases of sickness and 3 deaths, 12 were invalided. These numbers give the following annual rates per 1,000; cases of sickness 714·2, deaths 16·48, invalids 65·93. The rates of sickness and mortality exceed the corresponding rates for the previous year by 78·7 and 6·63 per 1,000 respectively; the invaliding rate is lower by 22·73 per 1,000. The prevailing diseases were febricula 32, enteric, simple continued, and remittent fever, of each 4, measles 2, diphtheria 1, rheumatism 11, diarrhœa 11, dyspepsia 7, accidents 12. The fatal cases were, enteric fever 1, diphtheria 1, and apoplexy 1.

Women.

The average annual strength was 370, among whom occurred 295 cases and 3 deaths, giving the respective annual rates per 1,000 of 797·3 and 8·11 which are higher than the corresponding rates for the previous year by 15·3 and 5·32 per 1,000 respectively. The prevailing diseases were febricula 32, simple continued fever 6, enteric fever 3, measles 3, rheumatism 18, phthisis pulmonalis 4, bronchitis 15, diarrhœa 27, dyspepsia 15, tonsillitis 11, tænia solium 7, child-birth 10, general debility 43. The causes of death were, enteric fever 1, phthisis pulmonalis 1, meningitis 1.

Children.

The average strength was 582, the number of cases was 531, and of deaths 35; the respective annual rates per 1,000 being 912·3 and 60·13, which are higher than the corresponding rates for the previous year by 87·3 and 9·88 per 1,000 respectively. The prevailing diseases were, measles 103, diarrhœa 94, dysentery 8, bronchitis 52, febricula 39, general debility 37, scarlet fever 8, whooping cough 11, teething 16, convulsions 9, diphtheria 2. The causes of death were diarrhœa 7, general debility 5, convulsions 4, measles 3, bronchitis 3, anæmia 2, meningitis 2, teething 2, diphtheria, phthisis pulmonalis, tabes mesenterica, croup, pneumonia, dysentery, and abscess, 1 respectively.

Invaliding.

The total number of non-commissioned officers and men invalided to England was 88, or 18·01 per 1,000, being less than the corresponding rate for the previous year by 15·19 per 1,000. The causes of invaliding were, paroxysmal fever 1, rheumatism 5, secondary syphilis 1, tubercular diseases 7, diseases of the nervous system 15, of the eye 9, ear 1, circulatory system 8, respiratory 13, digestive 6, sequelæ of gonorrhœa 1, diseases of the generative system 1, of the organs of locomotion 2, cellular tissue 3, cutaneous system 3, and debility 12. The number of men finally discharged the service was 58.

Mean Daily Sick.

The average number of non-commissioned officers and men constantly sick was 227·45, giving the annual rate per 1,000 of 46·56, which exceeds the corresponding rate for the previous year by an almost inappreciable fractional part. The average sick time to each soldier was 17·04 days, and the average duration of each case of sickness was 19·88 days; these numbers are fractionally higher than those for the previous year.

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Malta.

ROYAL MALTA FENCIBLE ARTILLERY.

In an average annual strength of 347 non-commissioned officers and men there were 193 admissions and 2 deaths, giving the respective annual rates of 556·2 and 5·76 per 1,000, the former being lower than the corresponding rate for the previous year by 37·3 per 1,000, and the latter exactly identical.

The admissions and deaths in the different classes and orders of diseases are shown in Abstract No. IIIA.

GENERAL DISEASES.—The total number under this heading is 42, giving the annual rate of 121·0 per 1,000, which is lower than the corresponding rate for the previous year by 43·2. In the *febrile* group the admissions were 32, giving the annual rate per 1,000 of 92·2, which is identical with the corresponding rate for the previous year. No deaths occurred during either year. The cases were, chicken pox 1, measles 2, febricula 26, ague 1, remittent fever 1, influenza 1. In the *constitutional* group the admissions were 10, giving the annual rate of 28·8 per 1,000, which is lower than that for the previous year by 43·2. The cases were, rheumatism 4, primary syphilis 3, secondary 1, tubercular diseases 1, other diseases (anæmia) 1. One death from phthisis pulmonalis gives the annual rate of 2·88 per 1,000 which is exactly identical with the rate of the previous year.

LOCAL DISEASES.—*Diseases of the Nervous System.*—One admission under convulsions, gives an annual rate of 2·9 per 1,000, exactly identical with the rate for the previous year. No death.

Diseases of the Eye.—Five cases give the admission rate of 14·4 per 1,000, exactly half that for the previous year.

Diseases of the Circulatory System caused 4 admissions, giving the annual rate of 11·5 per 1,000, which is higher than the rate for the previous year by 8·6. No death occurred, the rate of mortality during the previous year having been 2·88 per 1,000.

Diseases of the Respiratory System caused 20 admissions, giving the annual rate of 57·6 per 1,000, which exceeds that for the previous year by 8·6. No death occurred during either year. The cases were, bronchitis 14, pneumonia 2, pleurisy 2, and laryngitis 2.

Diseases of the Digestive System.—There were 26 admissions, giving the annual rate of 74·9 per 1,000, which exceeds the rate for the previous year by 17·3. The cases were, dyspepsia 8, diarrhœa 7, tonsillitis 5, hernia 3, colic 1, hæmorrhoids 1, hæmatemesis 1. No death occurred during either year.

Diseases of the Urinary System.—Gonorrhœa caused 15 admissions and its sequelæ 1, giving the combined admission rate of 46·1 per 1,000, which exceeds that for the previous year by 17·3. Nephritis caused 1 admission. No death occurred during either year,

Diseases of the Cutaneous System.—Thirty-three cases, giving the annual admission rate of 95·1 per 1,000, which is higher than that for the previous year by 11·6. The principal diseases were, boils 18, eczema 2, ulcer and whitlow, of each, 3.

CONDITIONS.—*Debility* caused 4 admissions, giving the annual rate of 11·5 per 1,000, which is lower than that for the previous year by 14·4.

INJURIES.—*General.*—One case of accidental drowning caused an annual death rate under this heading of 2·88 per 1,000, which contrasts with *nil* during the previous year. Under *local injuries* 35 cases caused the annual admission rate of 100·9 per 1,000, which is lower than that for the previous year by 28·8. The cases were, blisters of feet 15, wounds 11, contusions 6, sprains 3. No death occurred during either year.

Invaliding.

The number of invalids discharged the service was 8, giving the annual rate of 23·05 per 1,000, which is exactly half that for the previous year. The causes of invaliding were, diseases of the nervous system 1, of the eye 2, of the digestive system 2, of the cutaneous system 1, and general debility 2.

Mean Daily Sick.

The average number constantly sick, 7·30, gives the annual rate of 21·04 per 1,000, which is lower than the rate for the previous year by ·46.

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III.—Cyprus.

Cyprus.

STATISTICAL REPORT.

The average annual strength of non-commissioned officers and men was 443, among whom occurred 444 admissions and 1 death. The admission rate 1002·2 per 1,000, and the death rate 2·26 per 1,000, are lower than the corresponding rates for the previous year by 467·5 and 18·94 respectively.

The troops serving in the Command were the 31st Company Royal Engineers throughout the year; a wing of the 1st Battalion 20th Regiment from 1st January till the end of September; a wing of the 35th Regiment from the 6th of October till the end of the year. Detachments of the Army Service and Army Hospital Corps, and the men attached to the garrison staff and departments completed the garrison.

The stations occupied by the troops were Nikosia, by the head-quarters' staff, and a few men of the Royal Engineers; Limassol Depôt, by a strength varying from 21 to 79 men; Polymedia Camp, by the bulk of the troops from January till the end of May, and again from the beginning of October till the end of the year; during the above interval the troops were encamped on Mount Troodos, except a few left at Depôt Limassol, and in charge of the camp at Polymedia.

Some of the most important statistics of the health of the Corps which served in the Command are shown in Astract No. XLII. The admission, death, and invaliding rates of the Royal Engineers are lower than those for the previous year by 1218·5, 42·17, and 53·34 per 1,000 respectively. The Royal Engineers were the only portion of the garrison which had been stationed in the island continuously during the two years, the improvement in their health conditions is very marked and satisfactory; the admission rate of the wing of the 1st Battalion 20th Regiment is lower than that for the previous year by 105·6, and the death rate is *nil* as compared with 2·39 per 1,000; in the small strengths of the 35th Regiment, the departmental corps, and the garrison staff the admission rates indicate favourable health conditions and no deaths or invaliding occurred.

The Principal Medical Officer remarks that:—"The 31st Company Royal "Engineers had the highest admission rate; of the 91 admissions to hospital "23 were for paroxsymal fevers, and 29 were for venereal affections. The "admission rate for paroxsymal fevers was due to two causes: 1st. The men "were more exposed than those of other corps, while engaged on public "works, and were not unfrequently withdrawn from medical supervision. "2nd. Many of the admissions occurred to men who had suffered severely in "the autumn of 1878, and were to a certain extent relapses. The 1st Bat-"talion 20th Regiment had good health, and suffered very little from "paroxsymal fevers. Venereal diseases caused nearly half the number of "admissions. The men of the 35th Regiment, on arrival in October had a "very unhealthy and anæmic appearance. They had passed the summer at "Malta, and many of the men had suffered there from paroxsymal fevers, "which disease caused one third of the admissions of the regiment after its "arrival in the island."

The classes and orders of diseases by which the sickness and mortality in the Command were caused are shown in Abstract No. IV.

General Diseases.—The total admission rate, 521·5 per 1,000, is lower than the corresponding rate for the previous year by 163·4 per 1,000, and the mortality is *nil* as compared with 10·61 per 1,000. In the *febrile group* the admission rate is lower by 359·8 per 1,000, and the death rate is *nil* as compared with 10·61 per 1,000. In the *constitutional group* the admission rate is higher by 196·4 per 1,000, no death occurred during either year.

Eruptive Fevers.—No cases occurred.

Continued Fevers.—Caused 10 admissions and no death. The admission rate was 22·6 per 1,000, being lower than that for the previous year by 35 per 1,000. The cases were, febricula 9, and simple continued fever 1, they were of mild character and short duration, and were caused chiefly by exposure to the sun or by dietetic errors.

Paroxysmal Fevers.—Caused 87 admissions and no death. The admission rate is lower than that for the previous year by 324·8 per 1,000, and the rate of mortality *nil* as compared with 10·61. The cases were ague 80, remittent

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Cyprus.

fever 7, they were much milder in their nature than had been the cases which occurred in 1879. In many instances the cases were recurrences of the diseases in individuals who had previously suffered from them. The majority of the cases occurred in July and the latter part of August, and again in the month of November, the increased prevalence during the latter period having been coincident with unusually heavy rain.

Rheumatism.—The number of admissions was 13, giving the annual rate of 29·4 per 1,000, which is lower than the rate for the previous year by 8·5, the cases were, acute 2, chronic 1, muscular 10.

Syphilis.—The admissions for the primary form were 59, and for the secondary 60, giving the respective annual rates of 133·2 and 135·4 per 1,000, compared with the rates for the previous year, the former is higher by 96·8, and the latter by 109·6, giving a total increase of 206·4 per 1,000. The admissions from syphilis formed more than one fourth of the total number of admissions for the year, and the number constantly sick from this disease was a good deal more than one third of the total average number constantly sick. The Senior Medical Officer remarks that the primary disease was of a bad type, and that two men were invalided for secondary disease. "The disease is still " rife in Limassol, and no adequate measures have hitherto been adopted for " either its suppression or control."

Tubercular Diseases.—Only 2 admissions from this class of disease, namely, phthisis pulmonalis 1, and tubercular hæmoptysis 1. The admission rate 4·5 per 1,000 exceeds that for the previous year by 1·5. No death occurred during either year.

Local Diseases.—*Diseases of the Nervous System.*—Only 1 case, causing an annual admission rate of 2·2 per 1,000, which is lower than that for the previous year by 17·5.

Diseases of the Eye.—Only 3 cases, causing an annual admission rate of 6·8 per 1,000, which is lower than that for the previous year by 56.

Diseases of the Circulatory System caused 4 admissions, giving the annual admission rate of 9·0 per 1,000, which is fractionally less than that for the previous year. The cases were, palpitation 3, varix 1. No death occurred.

Diseases of the Respiratory System caused 15 admissions and 1 death. The admission rate 33·9 per 1,000 is lower than that for the previous year by 5·5, and the death rate 2·26 per 1,000 contrasts with *nil* during the previous year. The cases were bronchial catarrh 7, bronchitis 5, pneumonia 3. The death was from pulmonary extravasation, and occurred out of hospital.

Diseases of the Digestive System caused 43 admissions, giving the annual admission rate of 97·1 per 1,000, which is lower than that for the previous year by 177·1. The cases were tonsillitis 14, dyspepsia 10, diarrhœa 8, dysentery 5, hernia 3, pyrosis 1, splenitis 1, gum boil 1. The cases of dysentery were all recurrences of the disease in men who had suffered from it during the previous year. No death occurred, the death rate for the previous year having been 6·06 per 1,000.

Diseases of the Urinary System.—Gonorrhœa caused 45 admissions, and its sequelæ 6, giving a total annual admission rate of 115·1 per 1,000, which is higher than that for the previous year by 48·4.

Diseases of the Cellular Tissue.—Admissions 10, giving the annual admission rate of 22·6 per 1,000, which is lower than that for the previous year by 7·7.

Diseases of the Cutaneous System caused 25 admissions, the annual rate, 56·4 per 1,000, is lower than that for the previous year by 23·9.

Conditions, &c.—*Debility.*—Three cases, causing the annual admission rate of 6·8 per 1,000, which is lower than that for the previous year by 11·4.

Poisons.—Three cases of delirium tremens caused an annual admission rate of 6·8 per 1,000, almost exactly half that for the previous year.

Injuries.—No cases admitted under the heading of *general injuries.* There were 48 cases under *local injuries*, giving the annual admission rate of 108·4 per 1,000, which is lower than that for the previous year by 29·5. The cases were contusions 19, wounds 15, sprains 12, burns and scalds 1, fracture 1. The last named was a case of comminuted fracture of the thigh, which resulted in the invaliding of the patient. None are returned as having been *self inflicted.*

Surgical Operations.—None are recorded.

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Officers.

The average annual strength was 31, among whom occurred 11 cases of illness, deaths none, invaliding 2. The annual rates of cases 354·8, and invalids 64·51 per 1,000, are lower than the corresponding rates for the previous year by 751·6 and 63·14 respectively. Ague caused 3 cases, simple continued fever 1, rheumatism and affections of the digestive system, of each 2.

Women.

In the average annual number, 22, occurred 11 cases of sickness, or exactly 500 per 1,000, which is less than the corresponding rate for the previous year by 642·8. Febricula caused 2, and ague 1 of the cases, whitlow 2, phthisis, pulmonalis, neuralgia, tonsillitis, diarrhœa, ulcer, and burn each caused 1. No death occurred.

Children.

In an average annual number of 35 there were 16 attacks of illness and 1 death, giving the annual admission and death rate of 475·1 and 28·57 per 1,000, which are lower than the corresponding rates for the previous year by 810·6 and 73·43 respectively. The cases were, remittent fever 8, diarrhœa 4, ague, bronchitis, synovitis, and burns, of each 1. The case of burns terminated fatally.

Invaliding.

The number of non-commissioned officers and men invalided to England was 8, giving the annual rate of 18·07 per 1,000, which is lower by 19·79 than the rate for the previous year. The causes of invaliding were rheumatism 1, secondary syphilis 2, paralysis (third nerve), varix, chronic dysentery, abscess, and fracture, of each 1.

Mean Daily Sick.

The average number of non-commissioned officers and men constantly sick was 23·60, or at the rate of 53·27 per 1,000 throughout the year, of which the proportion 28·69 per 1,000 was caused by venereal diseases. The average sick time to each soldier was 19·50 days, and the average duration of each case of sickness was 19·45 days.

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IV.—ON THE HEALTH OF THE TROOPS SERVING IN THE DOMINION OF CANADA.

Sickness and Mortality.

STATISTICAL REPORT.

Dominion of Canada.

In a strength of 1,670 non-commissioned officers and men there were 1,434 admissions into hospital and 11 deaths, giving the annual rates of 858·7 and 6·59 per 1,000. Compared with the corresponding rates for the previous year the former is lower by 125·1 and the latter higher by 1·97 per 1,000.

The corps which served in Canada within the year were Royal Artillery, the 1st, 2nd, and 4th Batteries of the 10th Brigade and the 17th and 18th Batteries of the 9th Brigade; Royal Engineers, No. 1 Company, Detachment of No. 4 Company and No. 26 Company, the 1st Battalion 19th Regiment, the 97th and 101st Regiments; Detachments of the Army Service and Army Hospital Corps, the general staff, and attached men completed the garrison.

The following changes occurred, two Batteries Royal Artillery arrived from Bermuda and the West Indies on 22nd November, and two batteries left for Malta on the 25th of the same month; No. 1 Company Royal Engineers arrived on the 22nd May from England, and No. 26 Company embarked in June for England.

The first Battalion 19th Regiment arrived from Bermuda on the 22nd November and the 97th Regiment embarked for Gibraltar on the 25th of November.

The health statistics of these corps is shown in Abstract No. XLII.

The Principal Medical Officer remarks that, "Although the men of the 101st "Regiment have not suffered from ague during the last 15 months, the tone "of their health has been so much reduced that they have been more sickly "than any other corps in the garrison, 27 out of 63 invalids were from this "regiment, but their mortality was not greater than that of other corps;" their admission and invaliding rates were lower than those for the previous year by 704·2 and 16·40 per 1,000 respectively, their death rate was higher by 1·92 per 1,000, and their rate of constantly sick was lower by 16·96 per 1,000.

The admissions and deaths from the various classes and orders of diseases are shown in Abstract No. V.

General Diseases.—The total number of admissions was 395 and of deaths 6, giving the annual rates of 236·6 and 3·59 per 1,000 respectively, the former is lower by 190·9 per 1,000, and the latter higher by 1·86 per 1,000 than the corresponding rate for the previous year. In the *febrile* group the admission rate is lower by 241·6 per 1,000, and the death rate higher by ·60 per 1,000, and in the *constitutional* group, the admission rate is higher by 50·7 per 1,000 and the death rate higher by 1·26 per 1,000.

Eruptive Fevers.—No cases occurred.

Continued Fevers caused 19 admissions and 1 death, giving the annual rates of 11·4 and ·60 per 1,000 respectively, compared with the rates for the previous year, the former is higher by 7·9 per 1,000, and the latter stands against *nil*. The cases were enteric fever 5, simple continued 11, and febricula 3. One death occurred from simple continued fever, the patient being one of the look-out party at Dartmouth where low fevers had been rather prevalent, and the water on analysis was found to have been impure. Four of the cases of enteric fever occurred among men shortly after their arrival from Bermuda, in H.M.S. "Crocodile."

The Principal Medical Officer reports:—"A sick officer was landed who was "found to be suffering from enteric fever, a man of the Royal Artillery was "admitted almost immediately afterwards, and eventually there were 2 officers; "4 men, and 1 woman, all passengers by the 'Crocodile' under treatment for "this disease, it did not attack any others, it is evident that the poison was "absorbed before reaching Halifax."

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"The fifth case of enteric fever occurred in a man of 97th Regiment, em- "ployed in the engineer yard, no cause for it could be discovered." No death from enteric fever occurred among the men.

Paroxysmal Fevers.—The cases under this heading, all of ague, amounted only to 11, giving the annual rate of 6·6 per 1,000, which is lower than the corresponding rate for the previous year by 248·5 per 1,000. This remarkable decrease is due entirely to the disappearance of this class of fevers from among the men of the 101st Regiment. No death occurred during either the previous year or the year under report.

Other diseases.—Admissions 6, the cases being erysipelas 4, influenza 1, mumps 1, giving the admission rate of 3·6 per 1,000, which is lower than that for the previous year by 1·0 per 1,000. No death occurred.

Rheumatism caused 94 admissions and 1 death, giving the annual rates of 56·3 and ·60 per 1,000, the former exceeds that for the previous year by 31·4 per 1,000, the latter contrasts with *nil*. The cases were: muscular 42, acute 34, chronic 12, synovial 3, and gonorrhœal 3. The death occurred from acute rheumatism.

Syphilis caused 160 admissions under the primary and 87 under the secondary form of disease, the admission rate for the former, 95·8 per 1,000, is higher than the corresponding rate for the previous year by 2·1, and for the latter, 52·1 per 1,000, shows an increase of 13·4 per 1,000. The Principal Medical Officer attributes the increase in the prevalence of venereal diseases during the last two years chiefly to the concealment of disease during the existence of the regulation dating from October 1873 stopping the pay of soldiers while undergoing treatment in hospital for primary syphilis, acute gonorrhœa, and certain other diseases contracted through their own faults.

The cancelment of this regulation by the Army Discipline Act in November 1879 has been followed by an increase in the numbers of men admitted into hospital for primary and secondary syphilis. The Principal Medical Officer attributes the increase in the former class of cases to the men having no longer any inducement to conceal disease; he remarks also "that the number of "secondary to primary diseases in the period* is larger than usual leading to "the conclusion that there were more primary syphilis cases than were shown "in the hospital books." The increase in the admission rate for secondary syphilis during the year under report cannot, however, be attributed to this cause, as men suffering from this form of the disease were not subjected to any loss of pay. The fact appears to be that in the absence of any regulations for the restriction of the sources of disease, as regards not only their actual numbers but also their places of residence and their healthcondition, the facilities for indulgence placed in the way of the young soldiers especially, have led to the increase of venereal diseases, and that, as remarked by the Principal Medical Officer, "the introduction of the Contagious Diseases Act would be a "boon not only to the garrison but to the civil community." The matter has been under the consideration of the Colonial Government, and has apparently resolved into the question as to the distribution between the Imperial and Colonial Governments of the expense involved by the passing of a Contagious Diseases Act.

Tubercular Diseases caused 15 admissions and 4 deaths, giving the annual rates of 9·0 and 2·39 per 1,000, which exceed the corresponding rates for the previous year by 3·2 and 1·24 per 1,000 respectively. The cases were phthisis pulmonalis 10, tubercular hæmoptysis 4, scrofula 1. The deaths were all caused by phthisis pulmonalis.

Other Diseases.—The cases were anæmia 2, tumour (undefined) 1. No death occurred.

Local Diseases.—*Diseases of the Nervous System* caused 21 admissions and 1 death, giving the respective annual rates of 12·6 and ·60 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 5·7 per 1,000 and the latter contrasts with *nil*. The cases were epilepsy 7, neuralgia 7, paralysis 2, hemiplegia, sunstroke, acute mania, amentia, and dementia, of each 1. The death occurred out of hospital from general paralysis of the insane.

* The period referred to is that during which the men were liable to stoppage of pay while under treatment in hospital.

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Dominion of Canada.

Diseases of the Eye caused 20 admissions being in the annual rate of 12·0 per 1,000, which is fractionally lower than the corresponding rate for the previous year. Conjunctivitis caused 10 admissions.

Diseases of the Circulatory System.—Under this heading there were 33 admissions and 1 death, giving the respective annual rates of 19·7 and ·60 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 3·5 per 1,000, and the latter is almost identical. The cases were palpitation 17, valvular disease 6, varix 4, hypertrophy of heart 2, dilatation of thoracic aorta 2, dilatation of abdominal aorta 1, aneurism 1. The death was caused by hypertrophy of heart.

Diseases of the Respiratory System.—There were 126 admissions, giving the annual rate of 75·4 per 1,000, which exceeds the rate for the previous year by 19·3. No death occurred, the mortality rate during the previous year having been 1·15 per 1,000. The cases were 93 of catarrhal affections, 16 of pneumonia, bronchitis 12, asthma 2, laryngitis, pleurisy, and conjestion of lungs, of each 1.

Diseases of the Digestive System.—Admissions 217, and death 1, give the respective annual rates of 129·9 and ·60 per 1,000. Compared with the rates for the previous year the former is higher by 9·6 per 1,000, and the latter stands against *nil.* The principal causes of admission were dyspepsia 80, tonsillitis 75, diarrhœa 19, hernia 16, gumboil 8, tænia solium 4. The death was caused by perityphlitis.

Diseases of the Urinary System.—Gonorrhœa caused 149 admissions and its sequelæ 24, giving the total annual rate of 103·6 per 1,000, which is higher than the corresponding rate for the previous year by 25·6 per 1,000. Under "other diseases" are recorded 19 cases of balanitis, 4 of stricture, 2 of Bright's disease, 2 of incontinence of urine, 1 of cystitis, and 1 of hæmaturia. No death occurred.

Diseases of the Cutaneous System.—Admissions 68, giving the annual rate of 40·7 per 1,000, which is lower than the rate for the previous year by 2·1. No death occurred. The principal cases were ulcer 22, eczema 12, boil 9, whitlow 5, itch 5, condyloma 3, frost bite 2.

CONDITIONS.—*Debility.*—Only 3 admissions, giving the annual rate of 1·8 per 1,000, which is less than the rate for the previous year by 8·6.

POISONS.—Total number of admissions 41, of which 39 are recorded under alcoholic poisoning, and 2 under delirium tremens. No death occurred. The admission rate 24·5 per 1,000, exceeds that for the previous year by 8·9.

INJURIES.—Under *general injuries* are recorded 2 deaths out of hospital from asphyxia by drowning, 1 was accidental and the other *suicidal,* during the state of temporary insanity. The death rate 1·20 per 1,000 exceeds by a small fraction the rate for the previous year. *Local injuries,* caused 191 admissions, giving the annual rate of 114·4 per 1,000, which is lower than the rate for the previous year by 1·8. The cases were contusions 82, sprains 52, wounds 35, fractures 11, burns and scalds 6, blisters of the feet 3, dislocations 2. No death occurred. No *self-inflicted* local injuries are recorded.

Surgical operation.—There was only 1, namely, amputation of the index finger of right hand at joint of middle phalanx in consequence of wound from hatchet accidentally self inflicted while under the influence of drink.

Officers.

In an average annual strength of 83 there were 45 cases of sickness and 3 deaths, giving the annual rates of 542·2 and 36·14 per 1,000, the former exceeds the corresponding rate for the previous year by 42·8, and the latter stands contrasted with *nil.* The principal cases were enteric fever 2, febricula 2, rheumatism 6, gout 2, catarrh and bronchitis 12. The deaths were from enteric fever 1, leucocythæmia 1, and asphyxia by drowning 1, accidental.

Women.

In an average annual number of 135 there were 66 cases of sickness and 3 deaths, giving the annual rates of 488·9 and 22·22 per 1,000. Compared with the rates for the previous year the former is higher by 267·5 per 1,000

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and the latter contrasts with *nil*. The principal cases were general debility 18, bronchial catarrh 6, pleurisy 3, tonsillitis 3, peritonitis 1, metritis 3, rheumatism 3, enteric fever 1, phthisis pulmonalis 1. The deaths were from pleurisy 1, peritonitis 1, metritis 1.

Children.

In an average annual number of 259 there were 64 cases of sickness and 9 deaths, giving the respective annual rates of 247·1 and 34·75 per 1,000. Compared with the corresponding rates for the previous year the former is lower by 418·4 and the latter by 57·40 per 1,000. The principal cases were scarlet fever 3, measles 2, diphtheria 1, whooping cough 4, mumps 1, convulsions 3, meningitis 1, epilepsy 1, bronchitis and catarrh 14, pneumonia 3, diarrhœa 6, teething 4, general debility 9. The causes of death were scarlet fever 1, meningitis 1, epilepsy 1, convulsions 2, bronchitis 1, pneumonia 1, and general debility 2.

Invaliding.

The number of invalids sent home was 60, being at the annual rate of 35·93 per 1,000, which is higher than the rate for the previous year by 2·98. The several rates of invaliding were: from diseases of the febrile group *nil* as compared with 16·19 per 1,000 for the previous year, constitutional group 8·98 per 1,000, exceeding the rate for the previous year by 4·36. Local diseases 26·35 per 1,000 exceeding the rate for the previous year by 18·26, This increase occurred chiefly under diseases of the nervous, circulatory, and respiratory systems, diseases of the ear and of the organs of locomotion. Under debility there was a reduction of 2·87 per 1,000 in the rate of invaliding.

Mean Daily Sick.

The average number constantly sick during the year was 77·96, being at the annual rate of 46·68 per 1,000, which is higher than the rate for the previous year by ·98 The average sick time to each soldier was 17·08 days, which is slightly longer than that for the previous year. The average duration of each case of sickness was 19·90 days, which is longer than that for the previous year by 2·94 days.

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V.—ON THE HEALTH OF THE TROOPS SERVING IN BERMUDA.

Sickness and Mortality.

STATISTICAL REPORT.

Bermuda.

In an average annual strength of 1,974 non-commissioned officers and men there were 1,374 admissions into hospital and 19 deaths, including those of 3 invalids who died after arrival in or on passage to England. The admission rate 696·0 per 1,000, and the death rate 9·62 per 1,000, exceed the corresponding rates for the previous year by 99·6 and 4·54 respectively.

The composition of the Garrison was similar to that for the previous year, namely, two Batteries Garrison Artillery, five Companies Royal Engineers, two Regiments of Infantry, Detachments of the Army Service and Army Hospital Corps, and the General Staff. The following changes occurred:—The 15th and 16th Batteries of the 7th Brigade Royal Artillery arrived from Gibraltar in November, relieving the 17th Battery 9th Brigade, and 3rd Battery 10th Brigade. The 9th, 15th, and 20th companies of the Royal Engineers arrived from England in November, relieving the 21st, 25th, and 32nd Companies. The 99th Regiment arrived from South Africa in February, relieving the 46th Regiment, and the 86th Regiment from England relieved the 1st Battalion 19th Regiment in November. Some of the most important health statistics of these corps are shown in Abstract No. XLII.

The Principal Medical Officer remarks:—"that the men of the Royal Artillery "are older and more seasoned than those in the other corps. Of the 27 cases "of enteric fever not one came from the Royal Artillery," among whom also there was immunity from venereal diseases, but they presented the highest proportion of pulmonary consumption, and their death rate, 15·46 per 1,000, including the death of an invalid in England, is higher than that of any other corps serving throughout the year in the Command.

"Five cases of enteric fever occurred in the Royal Engineers, one of which "proved fatal; 12 cases of primary syphilis came under treatment from this "corps. Of a total of 13 admissions for fractures six occurred in this branch, "a circumstance to be accounted for by the nature of their duties at this "station."

The 1st Battalion 19th Regiment "gave three admissions for enteric fever"; no death occurred. "One case of scarlatina occurred, the origin of which "could not be traced. This Regiment presented the largest number of "admissions for primary syphilis, viz., 24. Of the 4 deaths 3 occurred in "hospital and one out from drowning."

In the 46th Regiment 3 cases of enteric fever, all recovered. In the 86th Regiment 2 cases of enteric fever occurred shortly after their arrival, and were remaining under treatment at the end of the year. No deaths occurred in this corps.

In the 99th Regiment "twelve cases of enteric fever occurred, 5 of which "proved fatal. The second highest number of admissions for primary syphilis "viz., 22," also came from this corps.

In the Army Service Corps one death occurred from tetanus, the result of injury caused by a fall. In the Army Hospital Corps there were 2 cases of enteric fever, both recovered. The death occurred out of hospital from drowning.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract No. VI.

General Diseases.—The total number of admissions from this class amounted to 260, and of deaths to 12, including the deaths of three invalids in England. The admission rate 131·7 per 1,000, and the death rate 6·08, are higher than the corresponding rate for the previous year by 23·1 and 4·56 per 1,000, respectively. Of the increase in the admission rate the *febrile group* furnished 12·6 per 1,000, and the *constitutional group* 10·5. In the death

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ate the increase in the *febrile group* was 1·52 per 1,000, and in the *constitutional group* amounted to 3·04 per 1,000, as compared with *nil* for the previous year. *Bermuda.*

Eruptive Fevers.—One case of scarlet fever with favourable termination occurred in a man of the 1st Battalion 19th Regiment in October. Four officers of the same corps also suffered from this disease, from which however the civil population not only at St. George's but throughout the islands was entirely free.

Continued Fevers.—The admissions were 84 and deaths 6, giving the respective annual rates of 42·6 and 3·04 per 1,000, which are higher than the corresponding rates for the previous year by 11·1 and 2·03 per 1,000. The cases were febricula 46, enteric fever 27, simple continued fever 11. The deaths were all from enteric fever. The Principal Medical Officer remarks that "enteric fever has established a footing in every part of these Islands, but "especially in the two chief military stations St. George's and Prospect." The narrow and tortuous streets, closely packed houses, defective drainage, and the cesspit system, combined with the absorbent nature of the soil, furnish decidedly insanitary conditions in the town of St. George's, but the registration of disease among the civil population shows that enteric fever is by no means common among the residents, and that "a fatal case has not been recorded for "nearly two years." At the military station of St. George's the sewage is said to be "effectually disposed of through the agency of covered drains "leading to the sea, and flushed with sea water pumped up by manual "labour," the supply of water was however liable to intermission. At Prospect no defects in the sanitary condition of the camp were detected. The above facts are suggestive as to the possibility of circumstances other than those attendant upon local sanitary defects being occasionally effective motors in the development of enteric fever.

Paroxysmal Fevers.—Ague caused 7 admissions and no death, the patients having in every instance contracted the disease elsewhere previous to arrival in the islands.

Other Diseases.—Influenza caused 2 admissions and erysipelas 1; no death occurred.

Rheumatism caused 59 admissions and no death, the annual admission rate, 29·9 per 1,000, exceeds that for the previous year by 8·6. The disease is neither prevalent nor severe in the islands, and many of the cases occurred among men who had previously suffered from the disease during the Zulu campaign in South Africa.

Syphilis in its primary form caused 65 and in its secondary 17 admissions, giving the annual rates of 32·9 and 8·6 per 1,000 respectively, compared with the rates for the previous year the former is fractionally lower, and the latter shows a decrease of 2·1 per 1,000. The amount of venereal diseases is moderate, notwithstanding the absence of any special legislative enactments. At Boaz in the Somerset district the highest proportion of cases occurs, and the matter has been brought to the notice of the Colonial Government by the Naval Authorities, with the view of establishing a lock hospital for the whole Command.

Tubercular Diseases caused 19 admissions and 5 deaths, including those of 3 invalids in England; the annual admission rate 9·6 per 1,000 exceeds that for the previous year by 3, and the death rate 2·53 per 1,000, contrasts with *nil* for the previous year. The cases were phthisis pulmonalis 15, hæmoptysis 3, and morbus coxæ 1; the deaths, including those of 3 invalids in England, were from phthisis pulmonalis 4 and hæmoptysis 1.

Other Diseases caused 5 admissions and 1 death, namely, anæmia 3, diabetes 1, and cancer of liver 1, the death was from the last-named disease; the total annual admission rate 2·6 per 1,000 is higher than that under the same heading for the previous year by 1·6, and the death rate ·51 per 1,000 stands against *nil* for the previous year.

Local Diseases.—*Diseases of the Nervous System.*—Under this heading 31 admissions and 2 deaths give the respective annual rates of 15·7 and 1·01 per 1,000, compared with the corresponding rates for the previous year the former is higher by 7·6 and the latter by ·50 per 1,000; the cases were neuralgia 11, epilepsy 5, sunstroke 4, paralysis, hemiplegia, dementia, melancholia, of each 2, hysteria 1, tetanus 1, abscess of brain 1, the 2 deaths were

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Bermuda.

from the two last-named diseases, the tetanus occurred as a result of fracture of the ulna near the elbow joint, and compound dislocation of the lower extremity of the same bone, the abscess of the brain occurred in connexion with chronic disease of the internal ear and the petrous portion of the temporal bone.

Diseases of the Eye caused 17 admissions, of which 10 were for conjunctivitis, 2 catarrhal ophthalmia, and 2 impaired vision. The annual admission rate 8·6 per 1,000 is less than that for the previous year by 5·1.

Diseases of the Ear caused 18 admissions giving the annual admission rate of 9·1 per 1,000, which exceeds that for the previous year by 1·5, the cases were, inflammation of the external meatus and of the tympanum, 8 of each, deafness 1, and perforation of tympanum 1.

Diseases of the Circulatory System caused 31 admissions without any fatal result, the admission rate, 15·7 per 1,000, is higher than that for the previous year by 4·5, the cases were palpitation 24, valvular disease 4, varix 2, aneurism of abdominal aorta 1, the last-named case was doubtful, being more probably functional derangement the result of intemperance; the cases of palpitation are considered to be attributable in many instances to the injudicious or excessive use of the cheap coast tobacco, the majority of the cases having however occurred among the men of the 99th Regiment recently relieved from active service in Zululand, it is highly probable that in at least some instances the permanent functional disturbance of the heart may have been the result of excitement of the circulation during the campaign.

Diseases of the Absorbent System.—The cases, 36 in number, were almost entirely inflammation or suppuration of the inguinal glands popularly attributed to "strains" received on the public works, but considered by the Principal Medical Officer to be more probably dependent upon constitutional impairment; the cases were nearly equally distributed between the stations of Prospect and St. George's; the admission rate 18·2 per 1,000 is lower than that for the previous year by 12·8.

Diseases of the Respiratory System.—The cases were bronchitis and bronchial catarrh 53, pneumonia 4, pleurisy 2, asthma 1, aphonia 1, no death occurred; the admission rate 30·9 per 1,000 is lower than that for the previous year by 6·7.

Diseases of the Digestive System caused 319 admissions and 2 deaths, giving, per 1,000, the annual admission rate of 161·6, and the death rate of 1·01. These rates exceed those for the previous year by 48·9 and ·50 per 1,000 respectively. The cases were dyspepsia 117, diarrhœa 87, tonsillitis and sore throat 45, colic 24, dysentery 12, hæmorrhoids 11, gum boil 7, hepatitis 5, ulceration of intestines, &c. 1, the deaths were from abscess of liver 1, and ulceration of intestines 1. Dysentery rarely occurs in Bermuda, and the cases during the year under report presented chiefly among men of the 99th Regiment who had already suffered from the disease in South Africa. Diarrhœa of mild character is of frequent occurrence among new arrivals. In the fatal case of ulceration of intestines the exciting cause was constriction of the large bowel. The death from abscess of the liver resulted probably from hæmorrhage into the sac of a large abscess in the right lobe.

Diseases of the Urinary System.—Gonorrhœa caused 45 admissions and its sequelæ 5, giving the respective annual admission rates of 22·8 and 2·6 per 1,000, the former being less than the rate for the previous year by 2·1 and the latter by 3·0 per 1,000. The other diseases were balanitis 5, stricture of urethra —not gonorrhœal 4, incontinence of urine 1, calculus in ureter 1, urinary fistula 1, and Bright's disease 1. No death occurred.

Diseases of the Generative System caused 22 admissions, giving the annual admission rate of 11·2 per 1,000, which is higher than that for the previous year by 2·6. The cases were orchitis 21, hydrocele 1.

Diseases of the Cutaneous System.—The admissions were 157, giving the annual rate of 79·5 per 1,000, higher by 23·7 than the rate for the previous year. The principal cases were ulcer 57, boil 35, itch 17, whitlow 10, herpes 8, tinea tonsurans 6, &c.

CONDITIONS, &C.—*Debility* caused 20 admissions and no death. The annual admission rate 10·1 per 1,000, is less by 8·7 than the rate for the previous year.

POISONS.—Under this heading the admissions were 29 and death 1. The annual rate of the former, 14·7 per 1,000, exceeds that for the previous year by

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7·1, the death rates for the two years are identical. The cases were alcoholic poisoning 22, delirium tremens 7, the death occurred under the latter disease. The cheapness and facility in the supply of liquor continue to be the causes of much intemperance. *Bermuda.*

INJURIES.—*General.*—Asphyxia by drowning, accidental, caused two deaths out of hospital, giving the annual death rate of 1·01 per 1,000, identical with that for the previous year.

Local Injuries caused 257 admissions and no death, the annual admission rate 130·2 per 1,000, exceeds that for the previous year by 20·5. The death rate *nil* contrasts with ·51 for the previous year. The cases were wounds 113, contusions 66, sprains 40, blisters of feet 15, fractures 13, burns and scalds 6, dislocation 1.

Self inflicted.—Cut-throat 2, gun shot wound, 1; in one of the cases of cut-throat, the wound, which was very slight, was inflicted by a man undergoing long imprisonment, the attempt being probably feigned, the man was afterwards discharged with ignominy; in the other a man under the influence of drink inflicted a deep but not dangerous wound on front of throat, on recovery he returned to duty. The gun shot wound was inflicted with a small revolver, the bullet, 28 grains in weight, penetrated and lodged in the lung, but caused no permanent distress and the man returned to duty. Many of the wounds and contusions were received at Prospect by men bathing, the beach was very rough, and on its being levelled and improved injuries became much less frequent.

Surgical operations.—None occurred during the year.

Officers.

In an average annual strength of 88 there were 41 cases of sickness and 1 death, giving an admission rate of 465·9 per 1,000, and a death rate of 11·36, the former exceeds that for the previous year by 147·2, and the latter contrasts with *nil*. The principal cases were diarrhœa 10, dysentery 2, scarlet fever 4, febricula 2, tonsillitis 3, sprain 3, debility 3, paralysis 1, &c. The death under paralysis was from locomotor ataxy.

Five officers were invalided, 3 for debility, 1 for diarrhœa, and 1 for synovitis.

Women.

In an average annual strength of 142 there were 36 admissions and 1 death, giving the respective annual rates of 253·5 and 7·04 per 1,000; the former exceeds that for the previous year by 62·3, and the latter contrasts with *nil*. The principal cases were anæmia 5, debility 3, diarrhœa 3, abortion 3, simple continued fever 2, dyspepsia 2, enteric fever 1, puerperal fever 1, &c., the death was from anæmia.

Children.

In an average annual strength of 288 there were 72 admissions and 17 deaths, giving the respective annual rates of 250·0 and 59·03 per 1,000, compared with the rates for the previous year the former is higher by 83·3 and the latter by 34·21 per 1,000. The principal cases were diarrhœa 20, measles 8, febricula 5, diphtheria 3, scarlet fever 2, tabes mesenterica 3, meningitis 2, convulsions 2, croup 1, teething 1, debility 6; the causes of death were diphtheria 3, debility 3, diarrhœa 2, meningitis 2, convulsions 2, croup 1, tabes mesenterica 1, teething 1, asphyxia by drowning 1, premature birth 1. The 2 cases of scarlet fever occurred immediately after disembarkation from H.M.S. "Crocodile." The cases of diphtheria occurred at St. George's.

Invaliding.

The number of men invalided was 59, being at the annual rate of 29·89 per 1,000, which exceeds the rate for the previous year by 20·25 per 1,000. The causes of invaliding were tubercular diseases 14, rheumatism 1, diseases of the circulatory system 11, of the nervous system 7, of the eye 4, of the digestive system 3, of the urinary system 4, including sequelæ of gonorrhœa 1, cutaneous

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Bermuda.

system 3, respiratory system 2, of the ear 1, of the generative system 1, of the organs of locomotion 1, debility 5, and local injuries 2. The number of men finally discharged the service was 22.

Mean Daily Sick.

The average number constantly sick, 79·25, gives the rate of 40·15 per 1,000, which is higher than that for the previous year by 6·03 per 1,000. The average sick time to each soldier, 14·69 days, is longer than the corresponding period during the previous year by 2·24 days. The average duration of each case of sickness, 21·11 days, exceeds the corresponding period for the previous year by ·23.

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VI.—ON THE HEALTH OF THE TROOPS SERVING IN THE WEST INDIES.

Sickness and Mortality.

STATISTICAL REPORT.

I. White Troops.

West Indies Command.

In an average annual strength of 1,037 non-commissioned officers and men there were 952 admissions into hospital and 9 deaths, being in the respective annual ratios of 918·0 and 8·68 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 276·9 and the latter lower by 1·59 per 1,000.

The force in the Command was composed and distributed as follows:—At Barbadoes the 18th Battery 9th Brigade Royal Artillery till the 6th November, being relieved by the 18th Battery 7th Brigade from Gibraltar, the head-quarters and 4 companies of the 1st Battalion 4th Regiment, a few non-commissioned officers of the Royal Engineers and West India Regiments, and staff sergeants and men of the Army Hospital Corps; at Trinidad a detachment of the 1st Battalion 4th Regiment; at Jamaica the 5th Battery 10th Brigade Royal Artillery till 27th October, being relieved by the 17th Battery 7th Brigade from Gibraltar, and the left wing of the 1st Battalion 4th Regiment. With the exception of a few men of the Royal Artillery and Engineers necessarily stationed at Port Royal, and two companies of the 1st Battalion 4th Regiment at Up Park Camp during January and February, the white troops were quartered at Newcastle.

Some of the most important of the health statistics of these corps are shown in Abstract No. XLII.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract No. VII.

General Diseases.—The total numbers of admissions 302, and of deaths 2, give the respective annual rates of 291·2 and 1·92 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 68·8 per 1,000, and the latter lower by 1·81. In the *febrile group* 218 admissions and 2 deaths give the respective annual rates per 1,000 of 210·2 and 1·92, the former being higher than that for the previous year by 67·2 per 1,000 and the latter lower by ·88. In the *constitutional group* there were 84 admissions and no death, the annual rate for the former 81·0 per 1,000 exceeds that for the previous year by 1·6, the death rate for the previous year ·93 per 1,000 contrasts with *nil* for the year under report.

Eruptive Fevers.—None occurred.

Continued Fevers caused 150 admissions and no death, the admission rate 144·6 per 1,000 is higher than that for the previous year by 21·2, the death rate for the previous year 1·87 per 1,000 contrasts with *nil* for the year under report. The cases were febricula 135, simple continued fever 14, enteric fever 1, the last named occurred at Newcastle.

Paroxysmal Fevers.—Admissions 67, deaths 2, being in the respective annual rates of 64·6 and 1·92 per 1,000, these rates exceed the corresponding rates for the previous year by 45·9 and ·99 per 1,000 respectively. The cases were ague 46, remittent fever 21; the two deaths occurred at Up Park Camp, and in one instance the antecedent illness presented a suspicious resemblance to yellow fever, in the other, the death was attributed to remittent fever.

Other Diseases.—Erysipelas caused 1 admission.

Rheumatism caused 31 admissions without fatal result; the annual admission rate 29·9 per 1,000 is lower than that for the previous year by 15·8; the cases were muscular 20, chronic 9, acute 1, gonorrhœal 1.

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West Indies Command.

Syphilis in the primary form caused 39 admissions, and in the secondary 4, giving the respective annual rates of 37·6 and 3·9 per 1,000; the former is higher than that for the previous year by 19·8, and the latter lower by 3·6 per 1,000. The disease prevailed chiefly at Barbadoes.

Tubercular Diseases.—Admissions 9, death none, the annual admission rate 8·7 per 1,000 is higher than that for the previous year by 1·2; the death rate for the previous year ·93 per 1,000 contrasts with *nil* for the year under report. The cases were all phthisis pulmonalis.

Other Diseases.—Anæmia 1 case, no death.

Local Diseases.—*Diseases of the Nervous System* caused 17 admissions and no death; the annual admission rate 16·4 per 1,000 is almost identical with that for the previous year; the death rate for the previous year was 1·87 per 1,000, contrasting with *nil* for the year under report. Neuralgia, epilepsy, and mental diseases were the chief causes of admission.

Diseases of the Ear caused 15 admissions, giving the rather high annual rate of 14·5 per 1,000; the cases were almost all inflammation of the external meatus.

Diseases of the Circulatory System caused 13 admissions and 1 death, giving the respective annual rates of 12·5 and ·97 per 1,000; the former exceeds that for the previous year by 7·8 per 1,000, and the latter contrasts with *nil*. The cases were valvular disease of heart 7, varix 3, palpitation 1, pericarditis 1, dilatation of heart 1. The death was from syncope resulting from shock caused by the falling of a barrack roof during the hurricane in August.

Diseases of the Absorbent System caused 17 admissions, giving the annual admission rate of 16·4 per 1,000, which is lower by 6 than the rate for the previous year.

Diseases of the Respiratory System caused 40 admissions and 1 death. The annual admission rate 38·6 per 1,000 exceeds that for the previous year by 20·8; the death rate ·97 per 1,000 is almost identical with that for the previous year. The cases were bronchial catarrh 27, bronchitis 7, pleurisy 4, asthma 1, pneumonia 1; the death was from pneumonia and occurred at Barbadoes.

Diseases of the Digestive System caused 135 admissions and 1 death. The annual admission rate 130·2 per 1,000 is higher than that for the previous year by 41·4, and the annual death rate ·97 per 1,000 is lower than that for the previous year by ·90 per 1,000. The principal cases were dyspepsia 67, diarrhœa 19, tonsillitis 15, hepatitis 6, colic 6, &c. The death was from abscess of the liver and occurred at Barbadoes.

Diseases of the Urinary System.—Gonorrhœa caused 64 and its sequelæ 8 admissions. The total annual admission rate 69·4 per 1,000 exceeds the corresponding rate for the previous year by 33·9 per 1,000. The admissions under "other diseases" amounted to 19, giving the annual admission rate of 18·3 per 1,000, which is higher than that for the previous year by 8·0 per 1,000; the cases were balanitis 16, nephritis, cystitis, and incontinence of urine, of each 1.

Conditions.—*Debility* caused 31 admissions but no death; the annual admission rate 29·9 per 1,000 is higher by 16·8 than that for the previous year.

Poisons.—The admissions under this heading 11 with 1 death give the respective annual rates of 10·6 and ·97 per 1,000, the former being higher than that for the previous year by 8·7 per 1,000, and the latter contrasting with *nil*. The cases were delirium tremens 7, alcoholic poisoning 3, and poisoning by opium 1; the death was from delirium tremens and occurred at Barbadoes, whence came also the larger number of cases.

Injuries.—One admission and 2 deaths are recorded under *general injuries*, giving per 1,000 the annual admission rate of 1·0, and death rate of 1·92. No cases or deaths occurred under this heading during the previous year. The admission was from burns; the 2 deaths occurred out of hospital, 1 from lightning stroke, the other is attributed to asphyxia by drowning while bathing from a boat in Carlisle Bay, Barbadoes; the body was not recovered. The admissions from *local injuries* were 139 and death 1. The annual admission rate for the former 134·0 per 1,000 exceeds that for the previous year by 38·7, and for the latter ·97 per 1,000 is lower by ·90. The cases were wounds 48, contusions 39, sprains 33, fractures 10, burns and scalds 4, blisters of the feet

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4, and dislocation 1. The death occurred at Newcastle, Jamaica, 24 hours after a quarrel near the canteen, and was the result of fracture of the fourth and fifth cervical vertebræ. No *self-inflicted* injuries are recorded. *West Indies Command.*

Surgical Operations.—None.

Officers.

In an annual average strength of 98, there were 69 cases of sickness and 3 deaths, 5 were invalided. The admission rate 704·0 per 1,000 is lower than that for the previous year by 19, the death rate 30·61 per 1,000 is higher by 3·83; the invaliding rate 50·02 per 1,000 is also higher than that for the previous year by 15·31 per 1,000. The principal cases were paroxysmal fevers 14, febricula and simple continued fever 8, enteric fever at Jamaica 1, yellow fever at Nassau 1, diarrhœa 5, dysentery 2, dyspepsia 2, general debility 7; the deaths were from general debility 2, and from dysentery 1. The causes of invaliding were general debility 3, dysentery 1, and Bright's disease 1.

Women.

In an average annual strength of 73 there were 15 admissions and 2 deaths, giving the annual admission rate of 205·0, and death rate of 27·40 per 1,000; the former is lower than that for the previous year by 221·0, and the latter contrasts with *nil*. The admissions were principally from general debility, and the deaths were from gastritis 1, and hæmorrhage post partum 1.

Children.

In an average annual strength of 148 there were 18 admissions and 2 deaths, giving the annual rates per 1,000 of 121·6 and 13·51, these rates being lower than the corresponding rates for the previous year by 97·3 and 23·07 per 1,000 respectively. Under no disease did more than 2 admissions occur. The deaths were from remittent fever 1, and hydrocephalus 1.

Invaliding.

The number sent home as invalids was 44, and the number finally discharged the service 13. The invaliding rate 42·43 per 1,000, is higher than that for the previous year by 15·33. The increase occurred chiefly under tubercular diseases.

Mean Daily Sick.

The average number constantly sick 44·47 gives the annual rate of 42·88 per 1,000 constantly sick, which is higher than that for the previous year by 10·25.

The average sick time to each soldier 15·70 days is longer than the corresponding period for the previous year by 3·79 days.

The average duration of each case of sickness 17·10 days is shorter than the same period for the previous year by 1·47 days.

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II. Black Troops.

West Indies Command.

In an average annual strength of 1,092 non-commissioned officers and men (exclusive of white sergeants) there were 1,191 admissions into hospital and 21 deaths, giving respectively the annual rates of 1,090·7 and 19·23 per 1,000.

Compared with the rates for the previous year the former is lower by 62·1, and the latter higher by 1·66 per 1,000.

The black troops serving in the Command were the left wing of the 1st West India Regiment, head-quarters of the 2nd West India Regiment, with a detachment of the corps of Military Labourers; the head-quarters and four companies of the 2nd West India Regiment arrived from Sierra Leone in H.M.S. "Tamar," and landed at Jamaica on 29th February, having left two companies at Barbadoes on 17th of the same month. Other details proceeded to British Honduras and Nassau. The stations occupied were Barbadoes, Jamaica, Nassau, Honduras, and Demerara.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract No. VIII.

General Diseases.—In the *febrile group* 287 admissions and 4 deaths give the respective annual rates for admissions 262·8, and for deaths 3·66 per 1,000, the former exceeds the rate for the previous year by 26·4 per 1,000, and the latter contrasts with *nil*; and in the *constitutional group* 251 admissions and 10 deaths give the respective rates of 229·9 and 9·15 per 1,000. Compared with the rates for the previous year the former is lower by 20·5, and the latter higher by 5·64 per 1,000. The total annual admission rate 492·7 and total annual death rate 12·81, compared with the corresponding rates for the previous year show an increase in the former of 5·9 and in the latter of 9·30 per 1,000.

Eruptive Fevers.—Chicken pox caused 2 admissions, one at Up Park Camp, Jamaica, landed from H.M.S. "Tamar," and one at Nassau.

Continued Fevers caused 46 admissions. The annual admission rate 42·1 per 1,000 is lower than that for the previous year by 102·9. No death under this head occurred during either year. The cases were febricula 33, and simple continued fever 13.

Yellow Fever.—One case with fatal termination occurred at Nassau, where several cases and deaths had occurred among the civil inhabitants. The annual admission and death rates, ·9 and ·92 per 1,000 respectively, contrast with *nil* for the previous year.

Paroxysmal Fevers caused 235 admissions and 3 deaths. The annual admission rate 215·2 per 1,000 exceeds that for the previous year by 124·7, and the annual death rate 2·74 per 1,000 contrasts with *nil* for the previous year. The cases were ague 216 and remittent fever 19; the deaths, ague 1 and remittent fever 2. Of the cases of ague, 148 occurred at Honduras, 38 at Jamaica, 16 at Demerara, 13 at Bahamas, and 1 at Barbadoes; the death occurred at Honduras. The cases of remittent fever were 9 at Bahamas, 9 at Jamaica, and 1 at Demerara; the 2 deaths occurred at Bahamas.

Other Diseases.—The cases were erysipelas, 1; influenza, 1; mumps, 1; no death occurred.

Rheumatism caused 89 admissions and no death. The annual admission rate, 81·5 per 1,000, is higher than that for the previous year by 22·6; the cases were chronic 64, muscular 15, acute 10.

Syphilis in primary form caused 112, and in secondary 31 admissions, giving the annual rates per 1,000 of 102·6 and 28·4, which are respectively lower than the corresponding rates for the previous year by 35·3 and 8·5 per 1,000.

Tubercular Diseases.—The number of admissions was 16, and of deaths 10, giving the annual rates per 1,000 of 14·6 and 9·15, which exceed the corresponding rates for the previous year by 1·4 and 5·64 respectively. The cases were phthisis pulmonalis 15, and tubercular hæmoptysis 1; the deaths were all from phthisis.

Other Diseases.—Anœmia, elephantiasis græcorun, and leprosy each caused 1 admission.

Local Diseases.—*Diseases of the Nervous System* caused 16 admissions and no death. The annual admission rate 14·6 per 1,000 is higher than that for the previous year by 2·3. The cases were chiefly epilepsy 6, neuralgia and from ague 5.

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Diseases of the Eye caused 13 admissions, giving the annual rate of 11·9 per 1,000, which is lower than that for the previous year by 4·8; the cases were chiefly conjunctivitis 9, keratitis 2.

Diseases of the Circulatory System caused 15 admissions and 1 death, giving the respective annual rates of 13·7 and ·92 per 1,000, the former exceeds that for the previous year by 3·2, and the latter contrasts with *nil*. The cases were palpitation 9, valvular disease 5, and pericarditis 1, the last-named occurred at Barbadoes and was fatal.

Diseases of the Respiratory System caused 61 admissions and 1 death, giving the annual rates of 55·9 and ·92 per 1,000, which are lower than the corresponding rates for the previous year by 26·7 and ·84 respectively. The cases were bronchitis 54, bronchial catarrh 3, pleurisy 3, asthma 1. The death occurred at Jamaica from chronic bronchitis.

Diseases of the Digestive System caused 105 admissions and 3 deaths, giving the annual rates of 96·2 and 2·74 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 14·5 and the latter lower by ·77. The cases were chiefly diarrhœa 31, dyspepsia 25, colic 10, dysentery 9, tonsillitis 8, hæmorrhoids 4, &c.; the 2 deaths were from dysentery, and occurred at Nassau.

Diseases of the Urinary System.—Gonorrhœa caused 105 admissions and its sequelæ 25, giving the annual rates of 96·2 and 22·9 per 1,000; compared with the corresponding rates for the previous year the former is lower by 49·7 and the latter by 2·6 per 1,000.

Other Diseases caused 6 admissions and 1 death, they were Bright's disease 2, 1 being fatal, balanitis, nephritis, cystitis, and incontinence of urine, of each 1. The annual admission rate under this heading 5·5 per 1,000 is lower than that for the previous year by 12·1, and the death rate ·92 per 1,000 is almost identical.

Diseases of the Generative System.—Admissions 45, giving the annual admission rate of 41·2 per 1,000, which exceeds that for the previous year by 21. The cases were orchitis 40, hydrocele 3, varicocele 1, œdema of scrotum 1.

CONDITIONS, &C.—*Debility* caused 19 admissions and 1 death, giving the respective annual admission rate of 17·4 and ·92 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 5·1 per 1,000, and the latter contrasts with *nil*.

POISONS.—Delirium tremens caused 1 admission.

INJURIES.—*General.*—No admissions or deaths. *Local.*—104 admissions, no deaths. The annual admission rate, 95·2 per 1,000, is lower than that for the previous year by 5·9, and the death rate for the previous year 1·76 per 1,000 contrasts with *nil* for the year under report. The cases were wounds 64, sprains 21, contusions 19. No *self-inflicted* injuries are recorded.

Invaliding.

The number of men discharged in the Command during the year was 40, giving the annual rate of 36·63 per 1,000, which is higher than that for the previous year by 9·40. The causes of discharge were rheumatism 7, secondary syphilis 7, tubercular diseases 9, other constitutional diseases 2, diseases of the nervous system 4, circulatory 4, digestive 1, cellular tissue 1, debility 4, local injury 1.

Mean Daily Sick.

The average number constantly sick, 70·28, gives the rate of 64·36 per 1,000, which exceeds that for the previous year by 11·79. Constitutional and febrile diseases, affections of the digestive system and gonorrhœa with its sequelæ were the chief causes of inefficiency. The average sick time to each soldier 23·56 days, and the average duration of each case of sickness 21·60 days, compared with the corresponding periods for the previous year are longer respectively by 2·21 and 3·08 days.

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VII.—ON THE HEALTH OF THE TROOPS SERVING IN THE WEST AFRICA COMMAND.

Section I.
Sickness and Mortality.

STATISTICAL REPORT.

1. White Troops.

West Africa. In an annual average strength of 12 European non-commissioned officers there were 12 admissions into hospital and no deaths, giving the annual rate of admissions as 1,000 per 1,000, the admission and death rates for the previous year having been respectively 1,916·6 and 83·33 per 1,000, the variations of rates, however, on such low strengths do not afford reliable information. The cases were remittent fever 5, ulcer 2, ague, erysipelas, sunstroke, paralysis, and general debility, of each 1. The number of invalids was 3, being one respectively from paralysis, chronic dysentery, and general debility.

2. Black Troops.

In an annual average strength of 623 there were 963 admissions into hospital and 14 deaths, giving the annual rates of 1,545·7 and 22·47 respectively per 1,000; compared with the corresponding rates for the previous year the former is lower by 37·6 and the latter higher by 8·25 per 1,000.

The Black Troops in the Command consisted of the 2nd West India Regiment at Sierra Leone and Cape Coast Castle from 1st January till 3rd February and 25th January being replaced till 31st December by the 1st West India Regiment on 17th and 24th January respectively.

At Sierra Leone the admission rate 1263·9 per 1,000 is lower than that for the previous year by 423·6 per 1,000, and the death rate 39·35 is higher by 26·85.

At Cape Coast the admission rate 2206·3 and the death rate 26·45 per 1,000 exceed the corresponding rates for the previous year by 816·8 and 9·01 per 1,000 respectively.

The admissions and deaths in each class and order of diseases are shown in Abstract No. IX.

General Diseases.—The total number of admissions 555 and of deaths 9 give the respective annual rates of 890·8 and 14·44 per 1,000; compared with the corresponding rates for the previous year the former is lower by 3·5, and the latter higher by 4·28 per 1,000; in the *febrile group* the admissions 410 and deaths 2, give the respective annual rates of 658·1 and 3·21 per 1,000, the former exceeds the rate for the previous year by 28 per 1,000, and the latter contrasts with *nil*; in the *constitutional group* the admissions 145 and deaths 7 give the respective annual rates of 232·7 and 11·23 per 1,000; compared with the corresponding rates for the previous year the former is lower by 31·5 and the latter higher by 1·07 per 1,000.

Eruptive Fevers.—One admission from measles causing a rate of 1·6 per 1,000, which is lower than the rate for the previous year by 12·6.

Continued Fevers.—Febricula 2 cases, causing the annual admission rate of 3·2 per 1,000, which is higher than the rate for the previous year by 1·2.

Paroxysmal Fevers caused 404 admissions and 2 deaths, giving the respective annual rates of 648·5 and 3·21 per 1,000; the former exceeds the rate for the previous year by 79·4 per 1,000, and the latter contrasts with *nil*; the

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cases were remittent fever 285 and ague 119, the 2 deaths were from remittent fever. *West Africa.*

Other Diseases.—Mumps 2, erysipelas, 1.

Rheumatism.—Caused 37 admissions and no death. The admission rate 59·4 is lower than that for the previous year by 21·9 per 1,000. The cases were chronic 31, muscular 4, acute 2.

Syphilis.—In the primary form caused 47, and in the secondary 41 admissions. The annual admission rate for the former 75·4 per 1,000 exceeds that for the previous year by a minute fraction, and for the latter is lower by 13·5 per 1,000.

Tubercular Diseases caused 19 admissions and 7 deaths, the admission rate 30·5 and death rate 11·23 exceed the corresponding rates for the previous year by 6·1 and 3·10 respectively.

Other diseases.—Anæmia caused 1 admission.

Local Diseases.—*Diseases of the nervous system* caused 8 admissions and one death, the admission rate 12·8 per 1,000 is less than that for the previous year by 9·6 and the death rate 1·61 per 1,000, contrasts with *nil*. The cases were neuralgia 2, brow-ague 2, encephalitis 1, meningitis 1, pleurodynia 1, and hysteria 1. The death was from meningitis.

Diseases of the Eye caused 16 admissions, giving the annual rate of 25 7 per 1,000, which is higher than that for the previous year by 3·3. The cases were chiefly conjunctivitis, tarsal, and catarrhal ophthalmia.

Diseases of the Circulatory System caused 12 admissions and 2 deaths, the admission rate 19·3 per 1,000 is lower than that for the previous year by 25·4 whereas the death rate 3·21 per 1,000 contrasts with *nil;* the cases were hypertrophy of heart 6, valvular disease 2, pericarditis, aneurism of thoracic aorta palpitation, and varix, 1 of each, the deaths were from pericarditis 1, and aneurism 1.

Diseases of the Respiratory System caused 51 admissions and 1 death, the admission rate 81·9 per 1,000 exceeds that for the previous year by 4·7, and the death rate 1·61 per 1,000 contrasts with *nil*, the cases were bronchitis 35, pneumonia, pleurisy, and congestion of the lungs, of each 5, and emphysema 1. The death was from pneumonia.

Diseases of the Digestive System caused 69 admissions and no death, the admission rate 110·7 per 1,000 is higher than that for the previous year by 7·0, the death rate for the previous year 4·06 per 1,000 contrasts with *nil* for the year under report; the principal cases were dysentery 16, tonsillitis 13, diarrhœa 9, dyspepsia 7, congestion of liver 4, colic 3, jaundice 2, &c.

Diseases of the Urinary System.—Gonorrhœa caused 57 and its sequelæ 17 admissions; the annual admission rate for the former 91·5 per 1,000 is lower than that for the previous year by 10·1, and for the latter 27·3 per 1,000 is higher by 13·1 per 1,000; under *other diseases* are recorded 2 cases of balanitis and 2 of cystitis. No death occurred.

Diseases of the Generative System caused 7 admissions from *orchitis.*

Diseases of the Cutaneous System caused 55 admissions; the admission rate 88·3 per 1,000 is lower than that for the previous year by 19·4; the principal cases were ulcer 19, tinea tonsurans 15, boil 8, eczema 7, &c.

Conditions.—*Debility* caused 7 admissions; the admission rate 11·2 per 1,000 is higher than that for the previous year by 5·1; no death occurred.

Poisons.—No case occurred, and during the previous year there had been only 1.

Injuries.—Under *General Injuries*, 1 death is attributed to asphyxia by drowning, accidental, giving a death rate of 1·61 per 1,000, contrasting with *nil* for the previous year; *local injuries*, 58, give an admission rate of 93·1 per 1,000, which is lower than that for the previous year by 6·5; the cases were wounds 30, contusions 20, sprains 5, concussion of brain 2, and dislocation 1. No death occurred. No *self-inflicted* injuries are recorded.

Surgical Operations.—None.

Officers.

In an average annual strength of 29 there were 42 cases of sickness, giving the annual rate of 1448·3 per 1,000 which is lower than the rate for the previous year by 1,592, no death occurred during either year. The cases were

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West Africa. remittent fever 23, general debility 6, ague 3, diarrhœa 2, epileptic vertigo, inflammation of glands, tonsillitis, dyspepsia, hepatitis, congestion of liver, simple enlargement of liver, and lichen, of each 1. Seventeen officers were invalided, chiefly in consequence of general debility and remittent fever.

Women.

In an annual strength of 77 women of West Indian or African origin, there were 94 admissions and 1 death, giving the respective annual rates of 1220·8 and 12·98 per 1,000. Compared with the rates for the previous year the former is lower by 987·4, and the latter by 7·85 per 1,000. The cases were chiefly remittent fever 66, ague 9, dysentery 3, bronchitis 2, aphthæ 2, inflammation of uterus 2, &c. The death was from remittent fever.

Children.

In an annual average strength of 48 there were 65 admissions and 2 deaths, giving the respective annual rates of 1354·1 and 41·66 per 1,000; the former is lower than that for the previous year by 194·9, and the latter higher by 22·06 per 1,000. The principal cases were remittent fever 43, bronchitis 4, ulcer 4, diarrhœa 2, dysentery 1, &c. The deaths were from remittent fever 1, and bronchitis 1.

Invaliding.

No cases of invaliding are reported.

Mean Daily Sick.

The average number constantly sick 38·83 gives the annual rate of 62·33 per 1,000, which is lower than the rate for the previous year by 1·45 per 1,000. The average sick time to each soldier 22·81 days, and the duration of each case of sickness 14·76 days, are respectively longer than the corresponding periods or the previous year by fractions of less than half a day.

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VIII.—ON THE HEALTH OF THE TROOPS SERVING AT THE CAPE OF GOOD HOPE AND AT ST. HELENA.

Sickness and Mortality.

STATISTICAL REPORT.

Cape of Good Hope and St. Helena.

The average annual strength of non-commissioned officers and men was 5,552, of whom 194 were at St. Helena. The admissions into hospital were 4,425, and the deaths (inclusive of those of 9 invalids, which occurred either during the homeward voyage or after arrival in England) amounted to 179. The annual admission rate 797·0, and the annual death rate 32·24 per 1,000, are lower than the corresponding rates for the previous year by 179·0 and 67·09 per 1,000 respectively. Compared with the average for the previous 10 years the admission rate is lower by 131·5 and the death rate is lower by 6·88 per 1,000. The Principal Medical Officer observes that notwithstanding the prevalence of enteric fever, chiefly in the Transvaal during the early part of the year, with a fresh outbreak in August, the general health of the troops was good, and that had it not been for the occurrence of hostilities with the Boers during the last few weeks of December, the year would have been uneventful.

The troops stationed in the Command were the King's Dragoon Guards, 17th Lancers, various details of Royal Artillery and Royal Engineers, the second battalions of the 4th, 21st, and 24th Regiments, the 58th Regiment, the third battalion of the 60th Regiment, the 91st and 94th Regiments, details of various other corps, men on the staff and of departmental corps.

The portion of the force stationed in St. Helena was composed of detachments of the Royal Artillery and Royal Engineers, the second battalion of the 4th Regiment, and the 91st and 99th Regiments, and men of the staff and departmental corps.

No changes occurred. Some of the most important health statistics of the various corps are shown in Abstract No. XLII.

The highest annual admission rate 1164·4 per 1,000 occurred in the 91st Regiment. The highest annual death rate 37·04 per 1,000 occurred in the 2nd battalion of the 4th Regiment, the death rate of the 91st Regiment was only 3·57 per 1,000.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract No. X.

General Diseases.—The total number of admissions was 1,744 and of deaths 65, giving the annual rates of 314·1 and 11·71 per 1,000, which compared with the corresponding rates for the previous year are lower by 68·6 and 8·90 per 1,000 respectively. In the *febrile group* 1,022 admissions and 60 deaths give the annual rates of 184·1 and 10·81 per 1,000, which are respectively lower than those for the previous year by 98·8 and 8·53 per 1,000. 1 case of scarlet fever and 2 cases of dengue caused 3 admissions under *eruptive fevers*, giving an admission rate of ·5 per 1,000, which is lower than that for the previous year by ·7; no death occurred during either year.

Continued Fevers caused 873 admissions and 56 deaths, giving the respective annual rates of 157·3 and 10·09 per 1,000, which are lower than those for the previous year by 56·3 and 7·26 per 1,000 respectively. The cases were simple continued fever 398, enteric fever 301, febricula 174. The deaths were from enteric fever 55, and from simple continued fever 1; of the cases of enteric fever 209, causing 46 deaths, occurred during the first quarter; 172, 12 being fatal, occurred at Pretoria, where the disease prevailed during the early portion of the year, 108 cases and 8 deaths having occurred during the first quarter; during the same period cases and deaths in varying numbers occurred at most stations throughout the Transvaal and Natal. The Principal

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Cape of Good Hope and St. Helena.

Medical Officer observes "that medical officers have been pretty well agreed "in assigning the cause of it to polluted water supply at the various en- "camping grounds on the line of march, and consider that it was not due to "causes in the various stations at which it occurred." . . . . "It was "found impossible to procure water from an unpolluted source along the "various high roads, owing to the filthy habits of the natives employed in "transport, and the enormous fouling of sites suitable for outspanning or "encamping by the oxen employed for draught, as many as 14 to 18 being "required for each cart or waggon." "Cases of enteric fever and diseases of "the digestive system occurred often largely after a corps arrived at its "destination, and were confined almost exclusively to fresh arrivals, ceasing "after they had been a little while on the station." The Senior Medical Officer of the Tranvaal district in his report says: "The appearance of the "same disease in 1877 at the opposite season of the year, on the annexation "of the Transvaal, its cessation then and in the present instance when the "movement of troops ceased, the absence of malarial fevers, the hitherto "healthy character of the country and the clinical appearances confirm the "view that this fever was true enteric, however much the unusual prevalence "of dysentery with abscess of the liver may have been influenced by conditions "of climate and service." However highly probable, as it must be admitted to be, that enteric fever should have prevailed among the natives, whose filthy habits are above referred to, it can hardly be maintained, in the absence of absolute proof of contamination of the water supply, by the fœcal discharges from individuals suffering from enteric fever, that the chain of evidence is sufficiently continuous to establish beyond the possibility of reasonable doubt an invariable causative connexion between pollution of water supply and the occurrence and spread of enteric fever. From a table given by the Principal Medical Officer it appears that in the 55 fatal cases of enteric fever, 29 occurred among men from 20 to 25 years of age, and 17 among those between 26 and 30; as, however, the relative numbers at the various ages throughout the year were not obtainable, the respective rates cannot be calculated.

Paroxysmal Fevers caused 132 admissions and 4 deaths, giving the respective annual rates of 23·8 and ·72 per 1,000, which are lower than the corresponding rates for the previous year by 42·1 and 1·19 per 1,000 respectively. The cases were remittent fever 98, ague 34, and the deaths were 3 from remittent fever and 1 from ague. Under *other diseases* occurred 14 admissions and no deaths, giving the respective annual rates of 2·5 and *nil* per 1,000; the former is almost identical with that for the previous year, and the latter contrasts with ·08 per 1,000; the cases were erysipelas 11, influenza 3.

In the *constitutional group* 722 admissions and 5 deaths, including 1 among invalids on the homeward voyage or after arrival in England, caused the annual admission and death rates of 130·0 and ·90 per 1,000, compared with the corresponding rates for the previous year; the former is higher by 30·2 and the latter lower by ·37 per 1,000. *Rheumatism* caused 195 admissions and no death, the annual admission rate 35·1 is lower by 20·3 per 1,000 than that for the previous year, during which also no death occurred from this disease. The cases were chronic rheumatism 110, muscular 44, acute 40, gout 1.

Syphilis in the primary form caused 413 and in the secondary 88 admissions, giving the respective annual rates of 74·4 and 15·9 per 1,000; compared with the corresponding rates for the previous year that for primary syphilis is higher by 57·5, or more than 4 times greater, and that for secondary is lower by 3·2 per 1,000. The very serious increase of primary syphilis in the South African Command having occurred almost entirely among the troops at Cape Town, emphasises the regret expressed by the Principal Medical Officer at the discontinuance in 1867 of the Contagious Diseases Act at that station. From the monthly returns furnished by the Principal Medical Officer for the year 1880, it appears that in the approximate annual average strength of 831 at Cape Town, the admissions into hospital for primary syphilis amounted to 298, giving the enormous annual admission rate of 352·8 per 1,000. During 9 months of the year 1879, no troops were quartered at Cape Town, comparison therefore between the 2 years is not attainable.

Under *tubercular diseases* occurred 18 admissions and 3 deaths, including that of an invalid at Netley, giving the admission and death rates of 3·2 and

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·54 per 1,000, which are lower than the corresponding rates for the previous year by 1·6 and ·57 per 1,000 respectively. The cases were phthisis pulmonalis 17, and tubercular hæmoptysis 1; the deaths, one of which occurred at St. Helena, were all from phthisis pulmonalis. *Cape of Good Hope and St. Helena.*

No cases of scurvy and purpura occurred, the admission rate under this heading for the previous year having been ·7 per 1,000.

Under *other diseases* occurred 8 admissions and 1 death, being at the respective annual rates of 1·4 and ·18 per 1,000. The cases were anæmia 3, general dropsy 2, diabetes 1, melanotic cancer 1, and suppurating cyst 1; the last named should more correctly have been returned among local diseases; the death was from cancer.

Local Diseases.—*Diseases of the Nervous System* caused 54 admissions and 5 deaths, including that of an invalid during the homeward voyage; the annual admission rate 9·7 per 1,000 is lower than that for the previous year by 3·5, and the death rate ·90 is higher by ·26 per 1,000. The cases were epilepsy 14, neuralgia 14, dementia 6, melancholia 4, hemiplegia 4, sciatica 4, mania 2, sunstroke 2, abscess of brain 1, apoplexy 1, paralysis 1, idiotcy 1; the deaths were from apoplexy 3, two having occurred out of hospital, abscess of brain 1, and locomotor ataxy 1, the last named having occurred on shipboard.

Diseases of the Eye caused 54 admissions, or 9·7 per 1,000 of the annual strength, which is lower by 2·7 than the rate for the previous year. The cases were conjunctivitis 42, keratitis 4, iritis 4, two being traumatic, tarsal ophthalmia 2, ulcer of cornea 1, impaired vision 1.

From diseases of the *circulatory system* the admissions amounted to 116, and the deaths, including those of 4 invalids at Netley, to 8, giving the respective annual rates of 20·9 and 1·44 per 1,000; compared with the corresponding rates for the previous year, the former is lower by 1·5, and the latter higher by ·56 per 1,000. The cases were palpitation 85, valvular disease 17, aneurism of aorta 5, varix 5, hypertrophy of heart 2, phlegmasia dolens 2. The deaths were from valvular disease 4, aneurism of aorta 2, rupture of aorta 1, fatty degeneration of heart 1; in the 2 last-named cases the deaths occurred out of hospital.

Diseases of the *respiratory system* caused 170 admissions and 4 deaths, including those of 2 invalids, of whom 1 died at sea and 1 at Netley, giving the annual rates of 30·6 and ·72, which are lower than the corresponding rates for the previous year by 9·8, and 1·67 per 1,000 respectively. The cases were bronchitis 98, bronchial catarrh 35, pneumonia 17, pleurisy 11, hæmoptysis 4, asthma 3, congestion of lungs 1, laryngitis 1. The deaths were from bronchitis 2, congestion of lungs 1, empyema 1.

From diseases of the *digestive system* the admissions amounted to 846 and the deaths to 14, giving the annual rates of 152·4 and 2·52 per 1,000 which compared with the corresponding rates for the previous year are lower by 65·9 and 4·64 per 1,000 respectively. The cases were: diarrhœa 246, dysentery 204, dyspepsia 121, tonsillitis 109, jaundice 41, hepatitis 25, tænia solium 21, hæmorrhoids 18, colic 14, gum boil 11, simple enlargement of liver 8, hernia 6, fistula in ano 4, ulcerated throat 3, sore throat, gastritis, typhlitis, constipation, ascites 2 respectively, inflammation of gums, ulceration of gums, pharyngitis, ulcer of rectum, abscess of liver 1 respectively. The deaths were from dysentery 11, abscess of liver 2, hepatitis 1.

Diseases of the Urinary System.—Gonorrhœa caused 164 and its sequelæ 31 admissions, giving the respective annual rates of 29·5 and 5·6 per 1,000, the former exceeds that for the previous year by 14·8 or is, in other words, exactly double, the latter is identical with the rate for the previous year. From the monthly returns furnished by the Principal Medical Officer it appears that of the admissions for gonorrhœa 97, or almost 60 per cent. of the total number, occurred at Cape Town, giving the annual rate of admissions for gonorrhœa at that station as 114·8 per 1,000, which added to 352·8, the admission rate above given for primary syphilis, gives the combined rate for venereal diseases of 467·6 per 1,000. The sequelæ were gleet 14, phimosis 7, bubo 5, epididymitis 4, condyloma 1. Under *other diseases* occurred 28 admissions, causing the annual rate of 5·0 per 1,000, the cases were balanitis 12, stricture of urethra 4, suppurative nephritis, hæmaturia renalis, urinary fistula, of each 3, Bright's disease 2, retention of urine 1.

Diseases of the Generative System caused 30 admissions or 5·4 per 1,000,

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Cape of Good Hope and St. Helena.

which is little more than half that for the previous year. The cases were orchitis 28, hydrocele 2.

Diseases of the Organs of Locomotion caused 26 admissions and 1 death, giving the annual rates of 4·7 and ·18 per 1,000, the former is lower than the rate for the previous year by 1·8 per 1,000, and the latter is fractionally higher. The cases were synovitis 11, periostitis 3, caries, progressive muscular atrophy, talipes equino-valgus, enlarged bursa 2 respectively, necrosis, inflammation of tendons, contraction of tendons, bursal tumour 1 respectively. The death occurred at Netley from lumbar abscess.

Diseases of the Cellular Tissue caused 66 admissions or 11·9 per 1,000, which is lower than the rate for the previous year by 9·2, the cases were abscess 50, inflammation 16.

Diseases of the Cutaneous System caused 254 admissions or 45·8 per 1,000, which is lower than the rate for the previous year by 14·1. The principal cases were ulcer 116, boil 34, eczema 29, whitlow 21, ingrown nail 19, itch 11.

CONDITIONS.—The admissions under *debility* were 191 with one death, the admission rate 34·4 is lower than that for the previous year by 20·8 per 1,000, and the death rate ·18 is fractionally higher. The admissions were chiefly for the debility following enteric fever and other acute diseases.

POISONS.—Under this heading occurred 18 admissions and 2 deaths, giving the respective annual rates of 3·2 and ·36 per 1,000, the former is less than that for the previous year by ·6 and the latter by ·67 per 1,000. The cases were delirium tremens 10, alcoholic poisoning 7, poisoning by belladonna 1; the deaths were from alcoholic poisoning, the result of over-indulgence in the pernicious country liquor.

INJURIES.—Under *general injuries* occurred 7 admissions and 8 deaths, all out of hospital, giving the respective annual rates of 1·3 and 1·44 per 1,000, the former exceeds that for the previous year by 1·1 and the latter is lower by ·23 per 1,000; the admissions however were for burns and scalds 6, the majority if not all of which should probably have been returned as local injuries, and for multiple injury 1. The deaths were from asphyxia by drowning 7, no information being given as to whether the drowning was accidental or otherwise, and one asphyxia by plugging of air passages during intoxication.

Under *local injuries* occurred 434 admissions and 3 deaths, giving the respective annual rates of 78·2 and ·54 per 1,000, compared with the corresponding rates for the previous year the former is higher by 2·7 and the latter by ·38 per 1,000. The cases were, wounds 163, contusions 127, sprains 99, fractures 19, blisters of feet 13, dislocations 5, concussion of brain 3, accidental gun shot wound 2, wounds of eye 2, concussion of spine 1. The deaths were from concussion of brain 1, contusion 1, the result of shock following a kick from a pony in the epigastrium, and *self-inflicted gun-shot wound* 1, the two last-named occurred out of hospital.

From wounds received *in action* the admissions amounted to 103 and the deaths to 68, 59 of the latter having occurred out of hospital. The annual admission rate 18·6 per 1,000 exceeds that for the previous year by 4·1, and the annual death rate 12·25 per 1,000 is lower than that for the previous year by 51·98 per 1,000. The Principal Medical Officer furnishes a special report on the medical and surgical features of the Boer campaign which will be found in the Appendix.

Surgical Operations.—The number of surgical operations performed during the year was 8, all of which occurred during the last fortnight of December in consequence of gun-shot wounds received in action at Bronkhorst Spruit when the detachment of the 94th regiment was attacked while en route for Prætoria. The operations were amputation of the thigh 4, of the leg 1, arm 1, and excision of the shoulder joint 2. There were in addition 10 cases of extraction of bullets.

Officers.

In an average annual strength of 230 the admissions amounted to 164 and the deaths to 10, given the annual rates of 713·0 and 43·48 per 1,000, which are lower than the corresponding rates for the previous year by 307·0 and 64·77 per 1,000 respectively. The principal causes of admission were simple continued fever 24, febricula 10, enteric fever 10, remittent fever 10, ague 5, dysentery 14, diarrhœa 9, rheumatism 7, hepatitis 4, jaundice 2, general debility

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15, fracture 6, contusion 5, concussion of brain 2, sprain 2, dislocation 2, wound 1, blisters of feet 1, gunshot wounds 2. The causes of death were: enteric fever 2, remittent fever 1, multiple injury 1 killed by a leopard, gunshot wound 1, murdered by Boers, and killed in action 5. All the deaths occurred in the Command. *Cape of Good Hope and St. Helena.*

The number invalided was 27, being at the annual rate of 117·4 per 1,000, which is lower than that of the previous year by 100·9, The causes for invaliding were general debility 9, remittent fever 4, simple continued fever 1, dysentery 3, gun-shot wound 2, chronic rheumatism, paraplegia, neuralgia, pneumonia, jaundice, simple enlargement of liver, fracture, dislocation, 1 respectively.

Women.

In an average strength of 242, occurred 130 admissions and 2 deaths, giving the respective annual rates of 537·2 and 8·26 per 1,000, the former exceeds that for the previous year by 81·2 per 1,000, and the latter contrasts with *nil*, no death having occurred during the previous year. The chief causes of admission were febricula 15, simple continued fever 13, enteric fever 6, measles 1, ague 3, bronchitis 9, diarrhœa 9, dysentery 7, general debility 13. The two deaths were from enteric fever.

Children.

In an average strength of 385 the number of admissions was 266 and of deaths 42, giving the annual rates of 690·9 and 109·09, which, compared with the corresponding rates for the previous year, are higher by 58·9 and 39·88 per 1,000 respectively. The chief causes of admission were measles 101, simple continued fever 7, febricula 5, enteric fever 2, scarlet fever 1, whooping cough 17, bronchitis 16, diarrhœa 29, general debility 27, tabes mesenterica 8, convulsions 8. The deaths were from measles 14, tabes mesenterica 6, convulsions 5, general debility 5, bronchitis 3, diarrhœa 3, simple continued fever, whooping cough, scrofula, meningitis, pneumonia, premature birth, 1 respectively. The Principal Medical Officer reports that measles had been imported by H.M.S. "Himalaya" in January, and H.M.S. "Orontes" in March. In both instances the disease had prevailed throughout the voyage having been contracted in Ireland before leaving.

Invaliding.

The number of men sent home as invalids was 262, being at the annual rate of 47·19 per 1,000, which is lower than the average for the 10 years from 1870 to 1879 by 1·93 per 1,000 and than the corresponding rate for the previous year by 64·24 per 1,000. The causes for invaliding were: continued fevers 24, paroxysmal fevers 12, rheumatism 13, secondary syphilis 3, tubercular diseases 6, diseases of the nervous system 18, of the eye 7, of the ear 2, of the circulatory system 59, of the absorbent system 1, of the respiratory system 10, of the digestive system 28, of the urinary system from other diseases than gonorrhœa or its sequelæ 4, of the generative system 1, of the organs of locomotion 10, of the cutaneous system 1, debility 48, local injuries 10, wounds received in action 5.

The number finally discharged was 223, or 40·16 per 1,000 of the strength, which exceeds the average for the 10 years from 1870 to 1879 by 25·16 per 1,000, and the corresponding rate for the previous year by 18·83 per 1,000.

Mean Daily Sick.

The average number constantly sick was 298·36 or 53·74 per 1,000, which exceeds the average for the ten years from 1870 to 1879 by 5·91 per 1,000, and is less than the corresponding rate for the previous year by 1·66 per 1,000.

The average sick time to each soldier was 19·67 days, and the duration of each case of sickness was 24·68 days. Compared with the previous year the former is shorter by ·55, and the latter is longer by 3·96 days.

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IX.—ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF MAURITIUS.

Sickness and Mortality.

STATISTICAL REPORT.

Mauritius. In an average annual strength of 353 non-commissioned officers and men there were 778 admissions into hospital and 2 deaths, including that of one invalid in England. The annual admission rate 2,203·9 per 1,000, and the annual death rate 5·67 per 1,000, are respectively lower than the corresponding rates for the previous year by 839·2 and 20·18 per 1,000.

The corps which served in the Mauritius during the year were the 10th Battery, 7th Brigade Royal Artillery, from 1st January till 15th September, on which date it left the Command, the 8th Battery, 7th Brigade Royal Artillery, arrived on 10th September, and was remaining at the close of the year; a detachment of the 91st Regiment served throughout the year, and the strength of the garrison was completed by a few attached men and men of the departmental corps.

Some of the most important of the health statistics of these corps are shown in Abstract No. XLII. Except in the departmental corps, the low strength of which renders useless comparison with the other corps, the admission rate presents very slight difference. The two deaths occurred in the Royal Artillery, causing the death rate of that corps for the year to be 20·83 per 1,000 as compared with *nil* in the Infantry.

The admissions and deaths from the various classes and orders of diseases are shown in Abstract No. XI.

General Diseases.—The total numbers of admissions 464 and of deaths 1, give the respective annual rates of 1,314·4 and 2·83 per 1,000; compared with the corresponding rates for the previous year the former is lower by 700·0 per 1,000, and the latter by a small fraction. In the *febrile group* 390 admissions give the annual rate of 1,104·8 per 1,000, which is lower than the rate for the previous year by 567·6 per 1,000, the death rate is *nil* as compared with 2·87 per 1,000 for the previous year; in the *constitutional group* 74 admissions and 1 death give the annual admission rates of 209·6 and 2·83 per 1,000, the former is lower than the corresponding rate for the previous year by 132·4 per 1,000, and the latter is higher as compared with *nil* for the previous year.

Eruptive Fevers.—No cases occurred.

Continued Fevers.—The admissions from this class of fevers, 33 in number, were all recorded as febricula, no deaths occurred. The annual admission rate 93·5 per 1,000 is lower than that for the previous year by 21·4 and the death rate is as *nil* compared with 2·87 per 1,000 during the previous year.

Paroxysmal Fevers.—The admissions amounted to 357; the cases were all recorded as ague, no deaths occurred. The annual admission rate 1,011·3 per 1,000 is lower than that for the previous year by 546·2.

Rheumatism caused 10 admissions and no deaths, the annual admission rate 28·3 per 1,000 is very little more than half the rate for the previous year.

Syphilis in the primary form caused 41 admissions and in the secondary 20, the annual rates for the former 116·1 and for the latter 56·7 per 1,000, are lower than the corresponding rates for the previous year by 39·1 and 64·0 per 1,000 respectively.

Tubercular Diseases.—No admissions occurred from this class of disease; the admission rate for the previous year having been 11·5 per 1,000, the death, however, of one invalid in England from pulmonary consumption caused a death rate for the year under this heading of 2·83 per 1,000, which contrasts with *nil* for the previous year.

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Other Diseases.—Under this heading 3 cases of anæmia caused an annual admission rate of 8·5 per 1,000, which contrasts with *nil* for the previous year. No deaths occurred during either year. *Mauritius.*

Local Diseases.—*Diseases of the Nervous System* caused 5 admissions and no death; the cases were sunstroke 1, epilepsy 1, neuralgia 2, and melancholia 1; the admission rate 14·2 per 1,000 exceeds that for the previous year by 11·3.

Diseases of the Eye.—Three cases of conjunctivitis caused an admission rate of 8·5 per 1,000, which is very nearly identical with that for the previous year.

Diseases of the Ear caused 7 admissions, giving the annual rate of 19·8 per 1,000, which is lower by a small fraction than the rate for the previous year; the cases were inflammation of tympanum 3, of external meatus 2, and abscess of the same 2.

Diseases of the Circulatory System caused 18 admissions and 1 death; the annual admission rate 51·0 per 1,000 is lower than that for the previous year by 12·2, and the death rate 2·83 per 1,000 is almost identical with that for the previous year. The cases were valvular disease 9, palpitation 7, hypertrophy of heart 1, varix 1; the death occurred out of hospital and was the result of fatty degeneration of the heart.

Diseases of the Absorbent System caused 19 admissions, giving the annual admission rate of 53·8 per 1,000, which is higher than that for the previous year by 4·9; the cases were inflammation of glands 18, suppuration 1.

Diseases of the Respiratory System caused 17 admissions and no death; the annual admission rate 48·2 per 1,000 is lower than that for the previous year by 12·1; the cases were bronchial catarrh 7, bronchitis 5, pleurisy 3, asthma 2.

Diseases of the Digestive System caused 53 admissions and no death; the annual admission rate 150·1 per 1,000 is lower than that for the previous year by 105·6, and the death rate of *nil* contrasts favourably with 14·37 per 1,000 during the previous year. The principal cases were diarrhœa 13, dyspepsia 13, dysentery 5, colic 5, tonsillitis 5, hepatitis 3, hæmorrhoids 3, gum boil 2, splenitis 1.

Diseases of the Urinary System.—Gonorrhœa caused 39 admissions and its sequelæ 17; the annual admission rate for the former 110·5 per 1,000 exceeds that for the previous year by 47·3, and for the latter 48·2 per 1,000 shows an increase over the corresponding rate for the previous year of 33·8; under "other diseases" are recorded 5 cases of balanitis and 1 of cystitis.

Diseases of the Cellular Tissue caused 14 admissions, giving the annual admisssion rate of 39·7 per 1,000, which is almost identical with that for the previous year.

Diseases of the Cutaneous System caused 28 admissions, giving the annual rate of 79·3 per 1,000, which is lower than that for the previous year by 58·6; the principal cases were ulcers 15, boils 9.

Conditions, &c.—*Debility* caused 21 admissions, giving the annual admission rate of 59·5 per 1,000, which is lower than the rate for the previous year by 21·0; no death under this heading occurred during either year.

Poisons.—One case of delirium tremens with favourable result.

Injuries.—*General,* no admissions or deaths; *local,* 60 admissions, no deaths; the annual admission rate 170·0 per 1,000 is lower than that for the previous year by 16·8. The cases were wounds 27, sprains 18, contusions 12, burn 1, gunshot wound, accidental, 1, cut throat, *self inflicted,* 1.

Surgical operations none recorded.

Officers.

In an average annual strength of 23, there were 17 cases of illness, and 1 death, giving the respective annual rates of 739·1 and 43·48 per 1,000. The cases were ague 7, anæmia 2, dyspepsia 2, phthisis pulmonalis 1, inflammation of membrana tympani 1, inflammation of glands 1, pleuro pneumonia 1, stricture of urethra 1, contusion 1; the death was from pleuro pneumonia. Three officers were invalided, 1 respectively for phthisis pulmonalis, dyspepsia, and stricture of urethra.

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Mauritius.

Women.

In an average annual strength of 19, there were 21 admissions and no deaths; the annual admission rate was 1,105·3 per 1,000. The cases were chiefly debility 7, ague 5, dysentery 2, febricula 1, anæmia 1, sunstroke 1.

Children.

In an average annual strength of 36 there were 12 admissions, giving the annual rate of 333·3 per 1,000, no death occurred. The cases were ague 4, debility 4, febricula 1, diarrhœa 1, dysentery 1, teething 1.

Invaliding.

Twenty-eight non-commissioned officers and men were invalided to England during the year, being at the annual rate of 79·32 per 1,000, which exceeds the corresponding rate for the previous year by 10·36 per 1,000. The causes of invaliding were paroxysmal fevers 15, secondary syphilis 3, anæmia 2, epilepsy 1, melancholia 1, valvular disease of heart 2, hypertrophy 1, palpitation 1, general debility 1, wound 1. Five men were finally discharged, being at the annual rate of 14·17 per 1,000, which is lower than the rate of final discharge for the previous year by 23·17 per 1,000.

Mean Daily Sick.

The average number of men constantly sick was 34·78, being at the rate of 98·53 per 1,000, which exceeds the corresponding rate for the previous year by 5·37 per 1,000. The average sick time to each soldier 36·06 days, is longer by 2·06 days than the corresponding period for the previous year. The average duration of each case of sickness 16·36 days, is longer by 5·19 days than the corresponding period for the previous year.

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X.—ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF CEYLON.

Sickness and Mortality.

STATISTICAL REPORT.

White Troops.

In an average annual strength of 1,000 there were 1,238 admissions into hospital and 25 deaths, including those of 3 invalids during the voyage to England. The strength being exactly 1,000 the several rates are represented by the actual numbers under the respective headings of admitted, died, &c. The annual admission and death rates are higher than those for the previous year by 56·6 and 5·70 per 1,000 respectively. *Ceylon.*

The force serving in the Command throughout the year was composed of the 12th and 13th Batteries of the 7th Brigade Royal Artillery, the 102nd Regiment and detachments of the Royal Engineers, Army Hospital Corps and Garrison Staff. No changes occurred.

Some of the most important of the health statistics of these corps are shown in Abstract No. XLII.

In the Royal Artillery the admission and death rates exceed those of the previous year by 322·1 and 19·65 per 1,000 respectively; in the 102nd Regiment these rates are higher than those for the previous year by 93·0 and 2·91 per 1,000, respectively. The admission and death rates of the Royal Artillery exceed those of the 102nd Regiment by 80·4 and ·33 per 1,000 respectively.

The Senior Medical Officer reports that:—"The prevailing disease in the "Royal Artillery have been dyspepsia, (in many instances caused by intemper-"ance) venereal, and simple continued fever. In the 102nd Regiment the "chief diseases were venereal and dysentery. Compared with last year there "is a decrease of sickness in this regiment probably due to the effect of partial "acclimatization, the regiment being sickly during the first year of residence "in the tropics. The men, although very young, were matured somewhat in "the past year, and are now better able to endure the climate than they were "on first arrival from Gibraltar in 1879."

The admissions and deaths in each class and order of diseases are shown in Abstract No. XII.

General Diseases.—The total admission and death rates 334·0 and 3·00 per 1,000 are lower than the corresponding rates for the previous year by 6·5 and 3·81 per 1,000 respectively. In the *febrile group* the admission rate 96·0 per 1,000 and the death rate 1·00 per 1,000 are lower than the rates for the previous year by 37·9 and ·14 per 1,000 respectively. In the *constitutional group* the admission rate 238·0 per 1,000 is higher than that for the previous year by 31·4 per 1,000, while the death rate 2·00 per 1,000 is lower by 3·67 per 1,000.

Eruptive Fevers.—One case of chicken pox.

Continued Fevers caused 87 admissions and 1 death; the admission rate is lower than that for the previous year by 7·2 per 1,000, while the death rate of 1·00 per 1,000 contrasts with *nil* for the previous year. The cases were simple continued fever 57, febricula 29, and enteric fever 1. The death was caused by the last-named fever.

Paroxysmal Fevers caused 8 admissions and no death, the admission rate is lower than that for the previous year by 14·7 per 1,000, and the death rate *nil* contrasts with 1·14 per 1,000 for the previous year. The cases were ague 6, remittent fever 2.

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Ceylon.

Rheumatism caused 20 admissions and no death. The admission rate is lower than that for the previous year by 10·7 per 1,000, the cases were chronic rheumatism 10, acute and muscular of each 5.

Syphilis in the primary form caused 156 admissions, and in the secondary 43, the rates under each heading are higher than those for the previous year by 32·3 and 14·6 per 1,000 respectively.

Tubercular Diseases caused 19 admissions and 2 deaths, including that of an invalid during the voyage to England. The admission rate is almost identical with that for the previous year, and the death rate is lower by 3·67 per 1,000. The cases were phthisis pulmonalis 10, hæmoptysis 7, scrofula 2, the deaths were both from phthisis pulmonalis.

Local Diseases.—*Diseases of the Nervous System* caused 28 admissions and 1 death; the admission rate exceeds that for the previous year by 21·2 per 1,000 and the death rate contrasts with *nil* for the previous year. The principal cases were dementia 6, imbecility 2, melancholia 1, sunstroke 5, pleurodynia 4, neuralgia 2, epilepsy 2, tetanus 1, meningitis 1, &c. The death was from tetanus, following incision of the scrotum for the purpose of relieving tension and constitutional disturbance caused by an unsuccessful attempt to radically cure a hydrocele, after death medullary cancer of the testicle was discovered.

Diseases of the Eye caused 15 admissions; the rate is lower than that for last year by 5·4 per 1,000.

Diseases of the Circulatory System caused 8 admissions and no death; the rate of admissions is lower than that for the previous year by 3·4 per 1,000, and the death rate *nil* contrasts with 1·14 per 1,000 for the previous year. The cases were palpitation 6, valvular disease 1, and pericarditis 1.

Diseases of the Absorbent System caused 58 admissions, the rate being lower by 1·0 per 1,000 than that for the previous year; the cases were inflammation of glands 48, suppuration 10. The unusual prevalence of diseases of this class of diseases probably depends upon cases of syphilitic or gonorrhœal origin having been erroneously recorded under the above heading.

Diseases of the Respiratory System caused 17 admissions and 1 death; the admission rate is lower than that for the previous year by 15·9 and the death rate by 1·27 per 1,000. The cases were bronchitis 13, pneumonia 3, laryngitis 1, one of the cases of pneumonia terminated fatally.

Diseases of the Digestive System caused 297 admissions and 15 deaths, including those of two invalids during the voyage to England. The admission rate is higher than that for the previous year by 17·8 and the death rate by 7·06 per 1,000. The principal cases were dysentery 77, dyspepsia 58, diarrhœa 57, hepatitis 56, tonsillitis 10, colic 8, jaundice 6, hæmorrhoids 5, gastritis 2, abscess of liver 1, peritonitis 1, &c. The deaths were from dysentery 11, including that of an invalid on the voyage to England, abscess of liver 1, gastritis 1, peritonitis 1, jaundice 1, during the voyage to England. Dysentery was most prevalent during June and July in the garrison of Colombo, many of the cases were of the hæmorrhagic form, very severe, and rapidly fatal. In several cases the treatment by ipecacuanha and opium was found effectual. The Principal Medical Officer observes "It was remarkable that when this "disease was prevalent among the troops at Colombo the civil population "then was almost free from bowel affections."

Diseases of the Urinary System.—Gonorrhœa caused 105 admissions and its sequelæ 16; the admission rate for the former is higher than that of the previous year by 44·8 per 1,000 and for the latter by 3·5. The *Other Diseases* were balanitis 5, hæmaturia 1, and incontinence of urine 1.

Diseases of the Generative System caused 19 admissions, the rate being higher than that for the previous year by 6·5 per 1,000; the cases were orchitis 17, hydrocele 2.

Diseases of the Cellular Tissue caused 39 admissions, the rate being fractionally lower than that of the previous year.

Diseases of the Cutaneous System caused 111 admissions, giving a rate lower than that for the previous year by 28·6 per 1,000. The principal cases were ulcers 47, boils 28, eczema 10, herpes 5, warts 5, itch 4, whitlow 4.

Conditions, &c.—*Debility* caused 11 admissions, giving a rate higher than that for the previous year by 3·1 per 1,000.

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POISONS.—Under this heading there were 4 admissions and 1 death, the admission rate is lower than that of the previous year by 3·9 per 1,000, and the death rate contrasts with *nil* for the previous year.

INJURIES.—Under *general injuries* no admissions occurred, but 3 accidental deaths resulted from asphyxia by drowning, giving a death rate in excess of that for the previous year by 1·86 per 1,000. Under *local injuries* there were 150 admissions and 1 death, the rate for the former is higher than that of the previous year by 34·2 per 1,000, and for the latter contrasts with *nil* for the previous year. The cases were sprains 55, contusions 51, wounds 24, fractures 8, blisters of feet 8, dislocations 3, wound of throat *self-inflicted*, 1; the death resulted from fracture.

Surgical Operations.—One was performed for the radical cure of hydrocele. The man died; after death medullary cancer of testicle was recognised.

Officers.

In an average annual strength of 48 there were 15 admissions and no death. The admission rate 312·5 per 1,000 is lower than that for the previous year by 426·5, and the death rate of *nil* contrasts with 21·73 per 1,000 for the previous year. The principal cases were dyspepsia 2, debility 2, phlebitis 2, contusion 2, ague 1, diarrhœa 1, &c. The number of officers invalided to England was 5, being at the rate of 104·2 per 1,000, which exceeds the rate for the previous year by 17·25 per 1,000. The causes of invaliding were dyspepsia 2, ague, non-malignant tumour of abdomen, and phlebitis 1 respectively.

Women.

In an average annual strength of 45, there were 21 admissions and no death; the admission rate 466·7 per 1,000 exceeds that of the previous year by 56·0 per 1,000, while the death rate of *nil* contrasts with 35·71 per 1,000 for the previous year. The cases were parturition 9, diseases connected with pregnancy and menstruation 3, debility 6, diarrhœa 2, dyspepsia 1.

Children.

In an average annual strength of 88, there were 11 admissions and 2 deaths, giving the rates of 125·0 and 22·73 per 1,000 respectively. The principal cases were simple continued fever 4, diarrhœa 2, dysentery 1, convulsions 1, bronchitis 1; the two last-named cases terminated fatally.

Invaliding.

The number of men invalided to England was 58, giving a rate in excess of that of the previous year by 29·61 per 1,000. The causes of invaliding were rheumatism 2, secondary syphilis 1, tubercular diseases 11, diseases of the nervous system 6, of the eye 1, of the circulatory system 3, of the respiratory 3, of the digestive 29, and of the organs of locomotion 2. The number finally discharged the service was 12.

Mean Daily Sick.

The average number constantly sick, 64·24, gives a rate in excess of that for the previous year by 8·0 per 1,000, the average sick time to each soldier 23·51, and the average duration of each case of sickness, 18·99 days, exceed the corresponding periods during the previous year by 2·68 and 1·62 days respectively.

Native Troops.

The native troops consist of a company of Gun Lascars distributed between the stations of Colombo, Trincomallee and Galle, the average strength was 86, the number of admissions 61, deaths 1, constantly sick 1·93. The death rate was 11·63 per 1,000. The amount and nature of sickness among the black troops were not serious.

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XI.—ON THE HEALTH OF THE TROOPS SERVING IN CHINA AND THE STRAITS SETTLEMENTS.

Sickness and Mortality of the Troops in China and the Straits Settlements.

STATISTICAL REPORT.

I.—*White Troops.*

China and Straits Settlements.

In an average annual strength of 1,781 non-commissioned officers and men there were 1,743 admissions into hospital, and 15 deaths, the admission rate 978·7 per 1,000, and the death rate 8·42, are higher than the corresponding rates for the previous year by 50·2 and 1·48 per 1,000 respectively.

The proportions in which the two divisions of the Command contributed to these results are shown in the following Table:—

Stations.	Average Annual Strength.	Admissions into Hospital.	Died.			Invalided home.	Average Daily Sick.	Ratio per 1,000 of Strength.				Average Sick time to each Soldier.	Average Duration of each case of Sickness.
			In the Command.	Of Invalids.	Total.			Admissions.	Deaths.	Invalided.	Average daily Sick.		
												Days.	Days.
Hong Kong -	954	964	10	—	10	19	47·71	1010·5	10·48	19·92	50·01	18·30	18·11
Straits Settlements.	827	779	4	1	5	16	34·13	942·0	6·05	19·35	41·27	15·18	16·04

The admission and death rates for the Hong Kong division of the Command are higher than those for the previous year by 61·5 and 3·35 respectively per 1,000.

For the Straits Settlements division the admission rate is higher by 36·0 per 1,000, and the death rate is lower by ·66 per 1,000.

The troops stationed in the Command throughout the year were the 9th and 14th batteries of the 7th brigade Royal Artillery, a detachment of the Royal Engineers, the 2nd battalion 3rd Buffs, the 27th Inniskillings, detachments of departmental corps, and a few non-commissioned officers on the garrison staff. No changes occurred during the year. Some of the most important of the health statistics of each corps are shown in Abstract No. XLII.

In the Royal Artillery the admission rate is higher than in the preceding year by 122·1 per 1,000, and the death rate 10·52 per 1,000 contrasts with *nil*. In the 2nd Battalion 3rd Regiment the admission rate is lower than in the previous year by 250·1 per 1,000, and the death rate 1·41 per 1,000 contrasts with *nil*. As, however, the regiment had only arrived in the Command on 29th November 1879, the comparison is of little value. In the 27th Regiment the admission rate is higher by 55·1 and the death rate by 4·85 per 1,000 than in the preceding year.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract No. XIII.

General Diseases.—The total annual admission rate 294·8 per 1,000 and the total annual death rate 2·81 per 1,000 exceed the corresponding rates for the previous year by 10·2 and ·68 per 1,000 respectively. In the *febrile group* the admission rate 202·7 per 1,000 and the death rate 1·69 per 1,000 exceed the corresponding rates for the previous year by 68·4 and 1·16 per 1,000 respectively,

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In the *constitutional group* the admission rate 92·1 per 1,000 and the death rate 1·12 per 1,000 are lower than the corresponding rates for the previous year by 58·2 and ·48 per 1,000 respectively.

Eruptive Fevers.—The admissions were from small-pox 2, and chicken pox 1, no death occurred; the admission rate 1·7 per 1,000 is lower than that for the previous year by 5·8.

Continued Fevers caused 222 admissions and no deaths, the admission rate 124·7 per 1,000 is higher than that for the previous year by 53·3, the death rate for the previous year ·53 per 1,000 contrasts with *nil* for the year under report. The cases were febricula 219, simple continued fever 3.

Paroxysmal Fevers caused 129 admissions and 1 death, the admission rate 72·4 per 1,000 exceeds that for the previous year by 19·6, and the death rate ·56 per 1,000 contrasts with *nil* for the previous year. The cases were ague 97, remittent fever 32, the death occurred at Hong Kong from remittent fever.

Other Diseases.—Under this heading 7 admissions and 2 deaths occurred, the admission rate 3·9 per 1,000 exceeds that for the previous year by 1·3, and the death rate 1·12 per 1,000 contrasts with *nil* for the previous year. The cases were diphtheria 3, erysipelas 2, and mumps 2. The cases of diphtheria, of which two terminated fatally occurred at Hong Kong, strict investigation failed to trace the source of the disease.

Rheumatism caused 25 admissions and no death, the annual admission rate 14·1 per 1,000, is lower than that for the previous year by 5·1. The cases were 15 of muscular, 9 of chronic, and 1 of acute rheumatism.

Syphilis in the primary form caused 107 and in the secondary 18 admissions; the annual admission rates for the former 60·1 per 1,000, and for the latter 10·1 per 1,000, are lower than the corresponding rates for the previous year respectively by 23·1 and 1·1 per 1,000.

Tubercular Diseases caused 12 admissions and 2 deaths, the annual admission rate 6·7 per 1,000 is lower than that for the previous year by 29·5 per 1,000, and the death rate 1·12 per 1,000 is higher by ·59 than in the previous year. The cases were phthisis pulmonalis 9, hæmoptysis 2, scrofula 1; the 2 deaths were from phthisis.

Other Diseases.—General dropsy and beri-beri each caused 1 admission. The case of beri-beri occurred at Fort Canning, Singapore, where during the early part of the year the disease had been epidemic and had caused a very high mortality.

Local Diseases.—*Diseases of the Nervous System* caused 37 admissions and 4 deaths, the annual admission rate 20·8 per 1,000 exceeds that for the previous year by 6·9 per 1,000, and the annual death rate 2·24 per 1,000 is higher by ·11. The principal cases were pleurodynia 13, neuralgia 6, sciatica 4, dementia 4, melancholia 3, mania 1, sunstroke 2, hemiplegia 1, paraplegia 1, meningitis 1, epilepsy 1; the deaths were from meningitis 1, hemiplegia 1, sunstroke 1, and paralysis 1; the latter being that of an invalid at Bow asylum.

Diseases of the Eye and of the Ear each caused 26 admissions, the annual admission rate each being 14·6 per 1,000, which, for diseases of the eye is lower than the rate for the previous year by 1·9 per 1,000, and for diseases of the ear is higher by 9·3 per 1,000; the chief diseases of the eye were conjunctivitis 16, tarsal ophthalmia 4; the diseases of the ear were all inflammation of the external meatus.

Diseases of the Circulatory System caused 20 admissions and 2 deaths, the annual admission rate 11·2 per 1,000 is lower than the rate for the previous year by 22·4, while the annual death rate 1·12 per 1,000 contrasts with *nil* for the previous year. The cases were palpitation 12, valvular disease 3, hypertrophy 1, varix 4; the deaths were from valvular disease out of hospital 1, and from hypertrophy 1.

Diseases of the Respiratory System caused 74 admissions and no deaths, the annual admission rate 41·5 per 1,000 is lower than the rate for the previous year by 4·9 per 1,000. The cases were bronchitis 33, bronchial catarrh 30, pleurisy 4, pneumonia 3, coryza 2, chronic pneumonic phthisis 1, laryngitis 1.

Diseases of the Digestive System caused 258 admissions and 2 deaths, the annual admission rate 144·9 per 1,000 exceeds that for the previous year by 11·1 and the death rate 1·12 per 1,000 is lower by 1·01. The principal cases were diarrhœa 82, dyspepsia 63, tonsillitis 29, tœnia solium 17, dysentery 11,

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China and Straits Settlements.

hepatitis 12, abscess of liver 2, jaundice 3, hernia 7, hæmorrhoids 3; the 2 deaths were from abscess of the liver.

Diseases of the Urinary System.—Gonorrhœa caused 192 admissions and its sequelæ 32; the annual admission rate for the former 107·8 per 1,000 exceeds that for the previous year by 8·1 and for the latter 18·0 per 1,000 is lower by 3·3. Under *other diseases* are included balanitis 5, Bright's disease 1, incontinence of urine 1, and urinary fistula 1.

Diseases of the Generative System caused 28 admissions, the annual admission rate 15·7 per 1,000 is lower than that for the previous year by 1·4. The cases were orchitis 25, hæmatocele 1, hydrocele 1, and spermatorrhœa 1.

Diseases of the Cellular Tissue caused 30 admissions, the annual admission rate 16·8 per 1,000 is lower than that for the previous year by 2·9. The cases were abscess 17, inflammation 13.

Diseases of the Cutaneous System caused 131 admissions; the annual admission rate 73·6 per 1,000 exceeds that for the previous year by 21·4. The principal cases were boil 38, ring worm, 28, ulcer 19, eczema 13, whitlow 9, herpes 4.

Conditions.—Under *Debility* there were 47 admissions, giving the annual rate of 26·4 per 1,000, which is lower than that for the previous year by a small fraction.

Poisons caused 22 admissions and 1 death; the annual admission rate 12·4 per 1,000 is higher than the rate for the previous year by 4·9, and the death rate ·56 per 1,000 contrasts with *nil* for the previous year. The cases were delirium tremens 12, alcoholic poisoning 10; the death was from delirium tremens.

Injuries.—Under *General Injuries* occurred 2 admissions and 1 death, giving the respective annual rates of 1·1 and ·56 per 1,000, each of which contrasts with *nil* for the previous year. The cases were asphyxia by immersion 1, and multiple injury, with fatal result, 1, both accidental.

Local Injuries caused 210 admissions and no deaths, the annual admission rate 117·9 per 1,000 is higher than that for the previous year by 11·3. The cases were wounds 80, sprains 50, contusions 45, blisters of feet 21, fractures 8, burns and scalds 4, dislocations 2. No cases of *self-inflicted injuries* or of *surgical operations* are recorded.

Officers.

In an average annual strength of 81 officers there were 41 cases of sickness and 1 death, the annual sick rate 506·2 per 1,000 exceeds that for the previous year by 123·5, and the death rate 12·35 per 1,000 contrasts with *nil* for the previous year. The principal cases were remittent fever 6, febricula 4, ague 2, diarrhœa 6, colic 2, general debility 3, wounds 2, sunstroke 1, neuralgia 1, delirium tremens 1, &c. The death was from remittent fever at Fort Canning. Eight officers were invalided, as compared with two out of the same strength during the previous year. The causes of invaliding were: general debility 4, diarrhœa 2, remittent fever 1, stricture of urethra 1.

Women.

In an average annual strength of 80 there were 47 admissions into hospital, and 2 deaths. The admission rate 587·5 per 1,000 and the death rate 2·500 are higher than the corresponding rates for the previous year by 198·6 and 6·49 per 1,000 respectively. The principal cases were diarrhœa 17, general debility 5, anæmia 3, palpitation 3, valvular disease 2, dysentery 2, remittent fever 2, febricula 3, simple continued fever 1. The deaths were from diarrhœa.

Children.

In an average annual strength of 116 there were 52 admissions into hospital and 7 deaths; the admission rate 448·3 per 1,000 and the death rate 60·34 are lower than the corresponding rates for the previous year by 218·3 and 44·92 per 1,000 respectively. The principal cases were diarrhœa 10, general debility 6, tabes mesenterica 4, chicken pox 4, ague 4, measles 1, febricula 1, remittent fever 1, meningitis 1, stomatitis 1, pneumonia 2, bronchitis and bronchial

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catarrh, of each 1, dysentery 1, pemphigus 2, wounds 3, &c. The deaths were from tabes mesenterica 3, and from ague, meningitis, stomatitis, and general debility 1 respectively. *China and Straits Settlements.*

Invaliding.

The number of men invalided to England was 35, being at the annual rate of 19·65 per 1,000, which is lower than the corresponding rate for the previous year by 20·32 per 1,000. The causes of invaliding were paroxysmal fevers 3, secondary syphilis 1, tubercular diseases 3, anæmia 1, diseases of the nervous system 1, eye 3, circulatory system 4, respiratory 1, digestive 6, urinary 1, organs of locomotion 2, cutaneous system 1, debility 6, local injuries 2. The number of men finally discharged the service was 24.

Mean Daily Sick.

The average number constantly sick was 81·84, giving a ratio of 45·95 per 1,000, which is lower than the corresponding rate for the previous year by 7·39 per 1,000. The average sick time to each soldier was 16·82 days, and the average duration of each case was 17·18 days; these periods are shorter than the corresponding periods for the previous year by 2·65 and 3·79 days respectively.

ASIATIC TROOPS.

The Asiatic troops in the Command consisted of a company of gun-lascars stationed at Hong Kong. Their health was on the whole satisfactory. The average annual strength was 91, admissions into hospital 141, and deaths 3. The annual admission rate 1549·4 per 1,000 and death rate 32·96 exceed the corresponding rates for the previous year by 379·0 and 10·24 per 1,000 respectively. The Principal Medical Officer reports that their health was, on the whole, satisfactory, the increase above noted not being attributable to any special disease or defective sanitation. The deaths were from remittent fever 1, anæmia 1, pneumonia 1. The average number constantly sick 6·08, being at the rate of 66·81 per 1,000 of the strength, which exceeds the rate for the previous year by 26·59 per 1,300. The average sick time to each soldier 24·45 days, and the average duration of each case of sickness 15·78 days, exceed the corresponding periods for the previous year by 9·76 and 3·23 days respectively.

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XII.—ON THE HEALTH OF THE TROOPS SERVING IN INDIA.

Sickness and Mortality.

Bengal. The average annual strength of the non-commissioned officers and men in India was 50,136; the admissions into hospital were 87,616; and the deaths 1,236, of which 1,176 took place in India, and 60 (being those of invalids) on the passage to or after arrival in England. The average number of constantly sick was 3475·59. The rates from these numbers are, for admissions 1747·6, for deaths 24·65, and for constantly sick 69·16 per 1,000 of the strength.

The sickness for each of the three Commands is shown in the following table:—

—	Average Annual Strength.	Admitted into Hospital.	Deaths.			Invalids sent Home.	Invalids discharged the Service.	Constantly sick.
			In India.	Of Invalids.	Total.			
Bengal - -	30,656	54,047	866	31	897	782	699	2176·15
Madras - -	10,280	14,084	100	8	108	238	171	647·25
Bombay - -	9,200	19,485	210	21	231	478	203	652·19
Total - -	50,136	87,616	1,176	60	1,236	1,498	1,073	3475·59

continued.

—	Ratio per 1,000 of Mean Strength.					Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
	Admitted.	Died.	Invalided Home.	Invalids discharged.	Constantly sick.		
						Days.	Days.
Bengal - -	1763·0	29·26	25·51	22·80	70·99	25·98	14·74
Madras - -	1370·0	10·51	23·15	16·63	62·96	23·04	16·82
Bombay - -	2117·9	25·10	51·96	22·06	70·89	25·94	12·25
Total - -	1747·6	24·65	29·88	21·40	69·32	25·37	14·52
Ten years, 1870—79 - -	1441·4	19·25	42·44	16·08	57·91	21·14	14·67

I.—BENGAL.

STATISTICAL REPORT.

Bengal. The average annual strength of non-commissioned officers and men in Bengal proper during the year 1880 was 30,656. This strength does not include regiments across the North-western frontier forming parts of the garrison in the Khyber and Kandahar. It is an increase of 1,527 over the average strength of 1879, due to the return of the greater portion of the field forces from Afghanistan, and would have been larger but for the despatch of reinforcements to South Africa.

The medical statistics of the troops on field service have been treated separately in a general medical history of the two Afghan Campaigns of 1878, 1879 and 1880, by the Principal Medical Officer in Bengal, in Appendix No. 111.

The number of admissions into hospital was 54,047, and of deaths (includ-

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ing those of 31 invalids, either during the homeward voyage or after arrival in England) 897. The number of invalids sent home was 782. The annual admission rate, 1763·0, is lower than that for the previous year by 256·6, and exceeds the average for the previous 10 years by 273·4 per 1,000. *Bengal.*

The annual death rate, 29·26, is lower than that for the previous year by 2·80, and higher than the average for the previous 10 years by 9·09 per 1,000.

The annual invaliding rate, 25·51, is lower than that for the previous year by 18·15, and than the average for the previous 10 years by 15·74 per 1,000.

The number of invalids finally discharged the service was 699, being at the annual rate of 22·80 per 1,000, which is lower than that for the previous year by 2·26, and higher than the average for the previous 10 years by 6·20 per 1,000.

The total rate of loss for the year by deaths and final discharge of men from the service 52·06 is lower than that for the previous year by 5·06 per 1,000, and exceeds the average for the previous 10 years by 15·79 per 1,000.

The admissions, deaths, and invaliding in the different classes and orders of diseases are shown in Abstract No. XIV.

GENERAL DISEASES.—The total annual admission rate, 989·7, and the total annual death rate, 13·04, are lower than the corresponding rates for the previous year by 213·1 and 4·47 per 1,000 respectively. In the *febrile group* the annual admission rate, 818·5, is lower than that for the previous year by 230·3, while in the *constitutional group* the annual admission rate, 171·2, shows an increase of 17·2 per 1,000, as compared with the rate for the previous year. The annual death rate in each group, *febrile* 11·09 and *constitutional* 1·95, is lower than each corresponding rate for the previous year by 4·05 and ·42 per 1,000.

Eruptive Fevers.—This class of fevers may be said to have reached the minimum rate in Bengal during 1880. The number of admissions was 20 and of deaths none. The annual admission rate, ·6, is lower than that for the previous year by 3·6 per 1,000, and the death rate *nil* contrasts with ·10 per 1,000 for the previous year. The cases were measles 12, chicken-pox 4, scarlet fever 2, small-pox 1, dengue 1.

Continued Fevers caused 4,922 admissions and 109 deaths, giving the annual rates of 160·6 and 3·55 per 1,000 respectively, Compared with the corresponding rates for the previous year the former is lower by 7·9 and the latter by ·50 per 1,000. The cases were simple continued fever 3,164, febricula 1,505, and enteric fever 253. The deaths were from enteric fever 95, simple continued fever 13, and febricula 1.

Paroxysmal Fevers.—The number of admissions was 19,778, and of deaths, including that of an invalid, 76, giving the respective annual rates of 645·2 and 2·48 per 1,000. Compared with the corresponding rates for the previous year the former is lower by 218·3 and the latter by ·10 per 1,000. The cases were ague 18,874 and remittent fever 904. The deaths were from remittent fever 66, including that of an invalid, and ague 10.

Cholera caused 209 admissions and 149 deaths, giving the respective annual rates of 6·8 and 4·86 per 1,000, the former is lower than that for the previous year by 2·8 and the latter by 3·41 per 1,000.

Comparing the proportions of deaths to cases during the two years 1879 and 1880, in the former year the number of cases was 281 and of deaths 241, giving a mortality rate of 857·65 per 1,000 cases. During the year under report the mortality rate was 712·92 per 1,000 cases, showing a decrease of 144·73. The high mortality rate of this disease during the previous year among the troops returning from field service is explained by their exposure to abnormal heat in camp, their low vitality from privation and malaria, and the impossibility of efficient nursing on the march back from the frontier.

Other Diseases.—Under this heading the admissions were 163 and the deaths 6, giving the respective annual rates of 5·3 and ·20 per 1,000. The cases were erysipelas 142, mumps 15, influenza 4, pyœmia 1, sloughing phagedœna 1. The deaths were from erysipelas 4, pyœmia 1, sloughing phagedœna 1.

Rheumatism caused 1,211 admissions and 1 death, giving the respective annual rates of 39·5 and ·03 per 1,000, the former is higher by 1·0 and the latter by ·04 per 1,000 than the corresponding rates for the previous year. The cases were muscular rheumatism 396, chronic 389, acute 309, lumbago 87, gonorrhœal rheumatism 12, acute gout 10, chronic osteo-arthritis 3, synovial

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Bengal.

rheumatism 2, stiff neck 2, chronic gout 1. The death was from acute rheumatism.

Syphilis in the primary form caused 2,916 admissions and no death, being at the annual rates of 95·1 and *nil* per 1,000, the admission rate exceeds by 18·2 that for the previous year during which also no death occurred. In the secondary form the admissions were 797 and deaths none, the annual admission rate, 26·0, is lower than that for the previous year by 1·7 per 1,000, and the death rate *nil* contrasts with ·10 per 1,000. The combined admission rate, 121·1, exceeds the corresponding rate for the previous year by 16·5 per 1,000.

Tubercular Diseases.—The admissions from this class were 229, and the deaths, including those of 12 invalids during the homeward voyage or after arrival in England—54, being at the respective annual rates of 7·5 and 1·76 per 1,000, compared with the corresponding rates for the previous year the former is higher by ·6 and the latter lower by ·27 per 1,000. The cases were phthisis pulmonalis 185, tubercular hæmoptysis 26, scrofula 17, tubercular meningitis 1. The deaths were from phthisis pulmonalis 53, and tubercular hæmoptysis 1.

Scurvy and Purpura caused 13 admissions, being at the annual rate of ·4 per 1,000, which is exactly half the corresponding rate for the previous year. No death occurred during either year.

Other Diseases caused 82 admissions and 5 deaths, including that of an invalid. The annual admission rate was 2·7, and the death rate ·16 per 1,000. The cases were anæmia 72, cancer 6, general dropsy 2, diabetes 1, and beri beri 1. The deaths were—from cancer 3, beri beri 1, and diabetes 1.

Local Diseases.—*Diseases of the Nervous System* caused 670 admissions and 117 deaths including that of an invalid. The annual admission rate, 21·9, per 1,000 is identical with that for the previous year, and the death rate, 3·82, is lower by ·13 per 1,000. The principal cases were sunstroke 230, apoplexy 20, meningitis 10, encephalitis 3, abscess of brain 1, fibrous tumour of brain 1, white softening of brain 3, yellow softening 1, red softening 1, locomotor ataxy 7, hemiplegia 3, paralysis not defined 8, paralysis, local, not defined 12, facial 1, hydrophobia 2, epilepsy 61, epileptic vertigo 10, convulsions 7, neuralgia 206, hypochondriasis 9, mania 16, melancholia 18, dementia 31, imbecility 1. The deaths were from sunstroke 86, apoplexy 15, meningitis 6, encephalitis 2, abscess of brain 1, fibrous tumour of brain 1, yellow softening of brain 1, red softening 1, hemiplegia—an invalid 1, paralysis—not defined 1, hydrophobia 2.

Diseases of the Eye, Ear, and Nose.—The respective annual admission rates under each of these headings are almost identical with the corresponding rates for the previous year. No death occurred during either year.

Diseases of the Circulatory System.—The admissions amounted to 448 and the deaths, including that of an invalid, to 24. The annual admission rate, 14·6, and death rate, ·78, are lower than the corresponding rates for the previous year by 1·7 and ·04 per 1,000 respectively. The principal cases were palpitation 325, valvular disease 50, pericarditis 4, endocarditis 4, hypertrophy of heart 8, fatty degeneration 2, occlusion of arteries 2, aneurism of thoracic aorta 6, abdominal 5, subclavian artery 2, rupture of subclavian artery 1, varix 33, phlebitis 2. The causes of death were valvular disease 7, pericarditis 3, hypertrophy of heart (including death of an invalid) 4, fatty degeneration 3, syncope 1, aneurism of thoracic aorta 3, occlusion of arteries 2, rupture of subclavian artery 1.

Diseases of the Absorbent System.—The admissions amounted to 672, giving the annual admission rate of 21·9 which exceeds that for the previous year by 5·9 per 1,000. The Principal Medical Officer observes that "the increase is "attributable to the numerous admissions from inflammation of the inguinal "glands, other than as sequelæ of venereal, and to the excess of marching and "harass of field service."

Diseases of the Respiratory System caused 1,568 admissions and 65 deaths, including those of 8 invalids. The annual admission rate, 51·1, is lower than that for the previous year by 9·2 per 1,000, and the annual death rate 2·12 is higher by ·44 per 1,000. The principal cases were bronchitis 774, bronchial catarrh 485, pneumonia 178, pleurisy 46, laryngitis 12, laryngeal catarrh 18, œdema of glottis 4, asthma 28, abscess of lung 5, hæmoptysis 5, pulmonary extravasation 1, empyema 1. The deaths were from pneumonia 49, including

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deaths of six invalids, bronchitis 6—including death of an invalid, abscess of lung 5—including death of an invalid, œdema of glottis 2, laryngitis 1, pulmonary extravasation 1, empyema 1.

Diseases of the Digestive System.—The admissions were 7,854 and the deaths, including those of 6 invalids, 190, giving the respective annual rates of 256·2 and 6·20 per 1,000. Compared with the corresponding rates for the previous year the former is lower by 10·6 and the latter higher by ·47 per 1,000. The principal cases were diarrhœa 2,361, dysentery 1,354, dyspepsia 1,015, hepatitis 711, abscess of liver 41, abscess of liver associated with dysentery 10, simple enlargement of liver 96, cirrhosis of liver 8, atrophy of liver 1, lardaceous liver 1, jaundice 241, splenitis 326, congestion of spleen 84, hypertrophy of spleen 4, peritonitis 8, ascites 8, hæmorrhoids 239, colic 152, constipation 31, obstruction of intestines 5, abscess in perineum 1, hernia 52, perforation of intestines 2, enteritis 4, typhtitis 3, tonsillitis 627, sore throat 115, ulcerated throat 46, chronic ulcer of stomach 2, tænia solium 52, tænia medio canellata 54. The deaths were from dysentery 85, including those of two invalids, diarrhœa 32, abscess of liver 27, including those of two invalids, abscess of liver associated with dysentery 10, hepatitis 10, atrophy of liver 1, cirrhosis of liver 1, lardaceous liver 1, splenitis 7, including those of two invalids, congestion of spleen 2, peritonitis 5, enteritis 2, perforation of intestines 2, hernia 1, obstruction of intestines 1, abscess in perineum 1, tonsillitis 1, chronic ulcer of stomach 1.

Diseases of the Urinary System.—Gonorrhœa caused 3,459 admissions, and its sequelæ 369, being in the respective annual ratios of 112·8 and 12·0 per 1,000, compared with the corresponding rates for the previous year, the former is lower by 19·2 and the latter by 1·8 per 1,000. The cases returned as sequelæ of gonorrhœa are gleet 218, epididymitis 68, bubo 49, phimosis 24, paraphimosis 10. Under "other diseases" are recorded 369 admissions and 7 deaths, giving the respective annual ratios of 12·0 and ·23 per 1,000, each of which is slightly below the corresponding rates for the previous year. The principal cases were balanitis 171, stricture of urethra 109, cystitis 16, incontinence of urine 14, nephritis 12, urinary abscess 4, extravasation of urine 2, Brights disease 28. The deaths were from Brights disease 3, extravasation of urine 2, urinary abscess 1, nephritis 1.

With reference to the decrease of diseases of the circulatory, respiratory, digestive, and urinary systems, the Principal Medical Officer remarks that, "the explanation is to be found in the return to cantonment life of a large "proportion of the troops who were on field service in 1879, and in more "favourable conditions of health, such as more nights in bed, improved diet, "relief from exposure, and better protection from unlicensed prostitutes."

Diseases of the Generative System.—The admissions were 459, giving the annual rate of 15·0, which exceeds that for the previous year by 1·2 per 1,000. No death occurred during either year. The principal cases were orchitis 421, hydrocele 18, varicocele 11.

Diseases of the Organs of Locomotion caused 160 admissions and three deaths, being at the respective annual rates of 5·2 and ·10 per 1,000, compared with the corresponding rates for the previous year the former is higher by ·6 and the latter lower by ·04 per 1,000. The principal cases were acute synovitis 49, chronic synovitis 31, periostitis 25, ostitis 11, nodes 5, abscess of muscle 4, gangrene 2. The deaths were from abscess of muscle 1, gangrene 2.

Diseases of the Cellular Tissue and of the Cutaneous System caused respectively 498 and 2,320 admissions, giving the annual rates of 16·2 and 75·7 per 1,000, the former is fractionally lower, and the latter fractionally higher than the corresponding rate for the previous year. The diseases of the cellular tissue were inflammation 109, and abscess 389. Under diseases of the cutaneous system the principal cases were ulcer 727, boil 682, eczema 186, warts 165, whitlow 104, itch 76, herpes 57, psoriasis 28, erythema 22, urticaria 15, Delhi boil 7.

Conditions, &c.—*Debility* caused 1,130 admissions and 7 deaths, giving the respective annual rates of 36·9 and ·23 per 1,000, the former is lower than the corresponding rate for the previous year by 7·4, and the latter is higher by ·06 per 1,000.

Poisons.—Under this heading the admissions were 125, and the deaths 14, giving the respective annual rates of 4·1 and ·46 per 1,000. Compared with the corresponding rates for the previous year the former is higher by ·3, and the latter by ·05 per 1,000. The cases were delirium tremens 76, alcohol 41,

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castor oil berries 3, stramonium 1, oxalic acid (taken while drunk) 2, putrid meat 1, snake bite 1. The deaths were from alcohol 7, delirium tremens 5, putrid meat 1, snake bite 1.

INJURIES.—From *general injuries* the admissions were 4, and the deaths 35, including that of an invalid. The annual admission rate, ·1, is lower than the corresponding rate for the previous year by 1·0 per 1,000, while the annual death rate, 1·14, is higher by ·62 per 1,000. The cases were multiple injury 2, burns and scalds 1, asphyxia by drowning 1. The deaths were from asphyxia by drowning 19, including that of an invalid on the homeward voyage, multiple injury 15, burns and scalds 1. Of the deaths from multiple injury 13 occurred at Naini Tal in the land slip by which a working party from the Hill Depôt perished. From *local injuries* the admissions were 2,691, and the deaths 35, giving the annual rates of 87·8, and 1·14 per 1,000, the former is almost identical with that for the previous year, and the latter is higher by ·35 per 1,000. The principal cases were contusion 1,065, sprain 734, wounds 566, fracture 125, dislocation 24, burns and scalds 39, concussion of brain 3, gunshot wounds 15, laceration of brain 1, rupture of spleen 1, of liver 1, of bladder 1. The deaths were from gun-shot 18, fracture of skull 7, wounds 5, concussion of brain 1, laceration of brain 1, rupture of spleen 1, of liver 1, of bladder 1. Of wounds *in action* 2 cases are recorded. "Two men "were killed out of hospital (*homicide*) and there were 12 admissions into "hospital from *suicide*, viz., 2 multiple injury, 4 wounds, and 6 gunshot, of "these 7 died. There were besides 15 *deaths by suicide* out of hospital, viz., "drowning 1, wounds 2, and gunshot 12."

Only 1 admission occurred under injury *judicially inflicted*.

Surgical Operations.—"The following details are collected from the annual "returns of medical officers.

"At the Dalhousie Hill Depôt 4 operations were performed, viz., amputation of the thigh, lower third, for accidental gunshot wound of the knee joint, recovery; amputation of right index finger, recovery; division of extensor tendon of left thumb, recovery; removal of phalangeal joint of toe, recovery. At Pachmarhi Hill Depôt a strangulated hernia was relieved by operation, but the patient died from peritonitis 110 hours afterwards. In the 62nd Regiment at Morar perineal section was performed in a case of extravasation following rupture of the urethra, fatal. In the Royal Artillery two small fibro cartilaginous tumours were excised from the elbow, recovery. Particulars of an operation in the 6th Dragoon Guards have not been received."

On the subject of the comparative health of the troops during each month of the year, the Principal Medical Officer makes the following remarks: "the "healthiest month is February, and thereafter both sickness and mortality "increase with a steady ratio until it reaches a maximum in September; after "this a decrease of disease follows until the minimum is regained in the en- "suing February. The ratios of the last quarter of the year are added to by "protracted convalescence and relapses following paroxysmal fevers of the "autumnal months. It is not until the cold season is drawing to a close, and "genial warmth and a dry atmosphere are general, that these disappear. Such "a type of climatic influence is common also among the natives in India; "although the minimum of February is in their case frequently continued until "May, because from habit and race they suffer in less proportion from heat as "a source of disease. But such a general rule is apt to be deranged under "epidemics of cholera, which in one year may be severe in the spring and early "summer months in the eastern portion of the Command, while in the next "its virulence is manifested much later in the Western divisions and districts."

Abstract No. XV. taken from the reports of the Principal Medical Officer shows the admissions and deaths which took place at the chief stations in the Command.

The uniformly increasing rate of sickness from east to west of the Presidency which was such a prominent feature in the statistical returns for 1879 repeats itself in those for the year under report, except that cholera in an epidemic form was very prevalent in the Oudh and Allahabad Divisions. The Principal Medical Officer observes that "the stations noted for comparative "salubrity continue to show favourable statistics, viz., Fort William, Sitapur, "Bareilly, Jubbulpore, Nowgong, Roorkee, Chuckrata, Umballa, Mooltan, "Sialkot, Cherat. Some other stations such as Ranikhet, Nowshera, Dug-

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" shai, and Fatehgarh would also have appeared in this list but for imported *Bengal.*
" disease. It often happens that the statistics of one station are augmented
" by disease acquired elsewhere, and in 1880 the movements of troops return-
" ing from field service were so numerous and varied that the healthiness or
" otherwise of a re-occupied cantonment cannot be fairly deduced."

Among stations which have had a strength of at least one corps throughout the year, the statistics of the following are deserving of record as being favourable, Fort William 1182·9 admissions and 6·10 deaths per 1,000, which exceed the corresponding rates for the previous year by 346·9 and 1·43 per 1,000 respectively. Dinapore 1388·0 admissions and 6·48 deaths per 1,000, which are lower than the corresponding rates for the previous year by 42·0 and 7·91 per 1,000 respectively; Sialkot, 1625·9 admissions and 8·73 deaths per 1,000, which are lower than the corresponding rates for the previous year by 575·1 and 72·65 per 1,000 respectively; Mooltan, admissions 1221·3 and deaths 8·56 per 1,000, which are lower than the corresponding rates for the previous year by 134·7 and 8·13 per 1,000 respectively. Among stations the statistics of which point in an opposite direction, the most unfavourable are found in Meean Meer, namely, 3043·2 admissions and 35·48 deaths per 1,000, which are lower than the corresponding rates for the previous year by 1058·8 and 6·82 per 1,000, respectively; Peshawar, admissions 3518·0 and deaths 37·82 per 1,000, compared with the corresponding rates for the previous year the former is higher by 842·0 and the latter lower by 35·33 per 1,000; Nowshera, admissions 2656·3 and deaths 55·6 per 1,000, which exceed the corresponding rates for the previous year by 546·3 and 6·38 per 1,000 respectively; Allahabad, admissions 1586·0, deaths 56·94 per 1,000, compared with the corresponding rates for the previous year the former is lower by 24 and the latter higher by 42·48 per 1,000.

Of stations the annual average strength of which was over 1,000, Dinapore and Peshawar have been noticed above. The others are as follow :—Cawnpore, the annual admission rate 1313·6, and the annual death rate, 20·02, are lower than the corresponding rates for the previous year by 908·4 and 4·44 per 1,000 respectively; Lucknow, the annual admission rate 1290·9, is lower than that for the previous year by 227·1, while the annual death rate 24·74, is higher by 4·87 per 1,000; Bareilly, the annual admission rate 1448·9, and the annual death rate 8·84, exceed the corresponding rates for the previous year by 104·9 and 3·35 per 1,000 respectively; Umballa, the annual admission rate 1638·8, and the annual death rate 9·07, are lower than those for the previous year by 568·2 and 8·75 per 1,000 respectively; Ferozepore, the annual admission rate 1233·6, is lower than that for the previous year by 930·4, while the annual death rate 13·74, is higher by ·67 per 1,000; Rawal Pindi, the annual admission rate 2349·4, and the annual death rate 20·03, are lower than the corresponding rates for the previous year by 272·6 and 18·81 per 1,000 respectively; among troops marching the annual admission rate 1350·5, is higher than that for the previous year by 146·5, while the annual death rate 39·91, is lower by 16·72 per 1,000; at the Hill Depôts the annual admission rate 1840·2, and the annual death rate 84·50, are higher than the corresponding rates for the previous year by 48·2 and 32·14 per 1,000, respectively.

Of stations, the average annual strength of which was under 1,000 and over 500, Calcutta, Allahabad, Meean Meer, Mooltan, Sialkot, and Nowshera have been noticed above. The others are as follows :—Dum Dum, annual admission rate 1421·9, is lower than that for the previous year by 654·1, while the annual death rate 23·44, is higher by 9·32 per 1,000; Morar, the annual admission rate 2036·1, and the annual death rate 11·30, are lower than the corresponding rates for the previous year by 238·9 and 39·37 per 1,000 respectively; Meerut, the annual admission rate 1927·1, is higher than that for the previous year by 89·1, and the annual death rate 23·89, higher by ·66 per 1,000; Agra, the annual admission rate 2248·2, may be said to be identical with that for the previous year, while the annual death rate 21·58, is lower by ·70 per 1,000; Delhi, the annual admission rate 3516·0, is lower than that for the previous year by 1113·0, while the annual death rate 24·48, was higher by ·56 per 1,000; Dugshai, the annual admission rate 1240·5, was higher than that for the previous year by 127·5, while the annual death rate 16·88, was lower by ·82 per 1,000.

Taking stations, the average annual strength of which was under 500 and

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over 200, the following results are observed:—Barrackpore, the annual admission rate 1918·0, is lower than that for the previous year by 316·0, while the annual death rate 16·39, is higher by 3·84 per 1,000; Benares, the annual admission rate 1763·2, and the annual death rate 20·69, are lower than the corresponding rates for the previous year by 563·8 and 7·27 per 1,000 respectively; Fyzabad, the annual admission rate 1472·4, and the annual death rate 9·20, exceed the corresponding rates for the previous year by 33·4 and 4·43 per 1,000 respectively; Shahjehanpore, the annual admission rate 1216·0, and the annual death rate 16·43, are lower than those for the previous year by 689·0 and ·89 per 1,000 respectively; Moradabad, the annual admission rate 1564·0, is lower than that for the previous year by 1258·0, while the annual death rate 44·00, is higher by 27·78 per 1,000; Ranikhet, the annual admission rate 970·8, is lower than that for the previous year by 327·2, while the annual death rate 24·33 per 1,000, contrasts with *nil* for the previous year; Choubatia, the annual admission rate 1127·3, and the annual death rate 14·98, exceed the corresponding rates for the previous year by 26·3 and 12·00 per 1,000 respectively; Saugor, the annual admission rate 1988·1, and the annual death rate 11·90, exceed those for the previous year by 405·1 and 1·90 per 1,000 respectively; Jubbulpore, the annual admission rate 1599·5, and the annual death rate 7·96, exceed those for the previous year by 461·5 and 2·34 per 1,000 respectively; Nowgong, the annual admission rate 1401·4, is higher than that for the previous year by 84·6, while the annual death rate 13·61, is lower by ·38 per 1,000; Fortress Gwalior, the annual admission rate 1289·9, is lower than that for the previous year by 297·1, while the annual death rate 29·59, is higher by 7·43 per 1,000; Jhansi, the annual admission rate 1861·1, and the annual death rate 11·11, are lower than the corresponding rates for the previous year by 246·9 and 5·15 per 1,000 respectively; Fatehgarh, the annual admission rate 1975·4, is lower than that for the previous year by 580·6, while the annual death rate 24·63 per 1,000, contrasts with *nil* for the previous year; Jullundur, the annual admission rate 1617·7, and the annual death rate 21·41, are lower than the correspondiug rates for the previous year by 1436·3 and 12·90 per 1,000 respectively; Subathu, the annual admission rate 1209·1, and the annual death rate 27·87, are lower than those for the previous year by 772·9 and 17·04 per 1,000 respectively.

Among stations, the annual average strength of which was below 200 and above 100, the results are as follows:—Hazaribagh, the annual admission rate 941·2, is lower than that for the previous year by 139·8, while the annual death rate 9·80 per 1,000, contrasts with *nil* for the previous year; Fort Allahabad, the annual admission rate 2120·3, and the annual death rate 37·97, exceed the corresponding rates for the previous year by 70·3 and 30·78 per 1,000 respectively; Sitapur, the annual admission rate 2144·2, and the annual death rate 57·69, are higher than those for the previous year by 1000·2 and 27·12 per 1,000 respectively; Chakrata, the annual admission rate 902·0, and the annual death rate 9·80, are lower than the corresponding rates for the previous year by 737·0 and 50·44 per 1,000 respectively; Fort Lahore, the annual admission rate 2341·3, and the annual death rate 23·81, are lower than those for the previous year by 933·7 and 1·19 per 1,000 respectively; Amritsar, the annual admission rate 2612·7, is lower than that for the previous year by 2173·3, while the annual death rate 14·08, is higher by 1·09 per 1,000; Campbellpore, the annual admission rate 2183·2, is lower than that for the previous year by 647·8, while the annual death rate 30·53, is higher by 12·67 per 1,000; Fort Attock, the annual admission rate 2979·5, is higher than that for the previous year by 358·5, while the annual death rate 35·90, is lower by 44·56 per 1,000.

Among the few stations with annual average strength under 100, Fort Chunar presents the highest annual admission and death rates, namely, 4287·9 and 30·30 per 1,000; Solon presents the lowest, namely, 815·2 and *nil*. The former is lower than that for the previous year by 317·8, and the latter contrasts with 15·96 per 1,000.

Referring to the statistics of divisions as shown in Abstract XVI., the Principal Medical Officer remarks that, "the year presents a less uniform "progress of disease causes from east to west than 1879." . . . "The "explanation of the heavy mortality as compared with the admissions is to be

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"found in the incidence of cholera, enteric fever, dysentery, diarrhœa, and "hepatitis. From the first, Allahabad Division had 53 deaths, Oudh 38, "Rohilcund 10, and Peshawur 9. From enteric fever, Allahabad Division "lost 8, Rohilcund 12, Oudh 18, Meerut 6, Sirhind 13, Rawul Pindi 8, and "Peshawur 16. From the three last diseases combined, Meerut had 22 "deaths, Rawul Pindi 22, Peshawur 26, Sirhind 16, and Lahore 15. It has "already been stated that with the exception of cholera, the majority of "deaths which occurred from these diseases was not due to the locality, but "had a distinct history of previous exposure to insanitary conditions else-"where."

Presidency Division, the annual admission rate 1495·6, and the annual death rate 15·21, are higher than the corresponding rates for the previous year by 8·2 and 5·39 per 1,000 respectively. "The Deputy Surgeon-General "describes intermittent fevers as very prevalent and virulent. There were no "other epidemics." *Allahabad Division*, the annual admission rate 1615·0, is lower than that for the previous year by 273·0 per 1,000, while the annual death rate 28·18, is higher by 6·84 per 1,000. "The mortality was heavily "increased by a severe outbreak of cholera in the 2nd Battalion 22nd Regi-"ment. There were 53 deaths from this cause in the division. If these are "deducted the ratio for 1880 would be only 11·8 per 1,000. The epidemic "lasted from the 26th July to the 20th September." *Oudh Division*, the annual admission rate 1422·5, is lower than that for the previous year by 43·1 per 1,000, while the annual death rate 33·18, is higher by 15·05 per 1,000. "Cholera was prevalent in the civil population all through the hot "season. It appeared at intervals among the troops in garrison. The severest "outbreak occurred in the military prison, 25 cases and 20 deaths; the "artillery had 12 cases and 4 deaths; and the 73rd Foot 6 cases and 5 deaths. "Enteric fever was also present both in the spring and autumn." *Saugor and Gwalior*, for the first time both brigades have been united under the same administrative officer, whose head-quarters remain at Jubbulpore. The annual admission rate of Saugor 1736·7, and the annual death rate 12·24, exceed the corresponding rates for the previous year by 343·5 and 1·61 per 1,000 respectively; the annual admission rate of Gwalior 1946·2, and the annual death rate 14·79, are lower than the corresponding rates for the previous year by 188·8 and 22·89 per 1,000 respectively. "Paroxysmal fevers were general "both among young and old and at all the stations. Cholera was not "prevalent in the Command. Enteric fever was present, but not epidemi-"cally. The cases mostly occurred in young soldiers, and their diagnosis "was obscured by symptoms usually attributed to malarious fevers." *Rohilcund District*.—"The medical administration of the troops in Rohilcund "and of the Hill Depôt at Naini Tal was transferred in 1880 to the Deputy "Surgeon-General of the Oudh Division in addition to his other duties." The annual admission rate 1413·6, is lower than that for the previous year by 62·2 per 1,000, while the annual death rate 19·70, is higher by 9·19 per 1,000. The death rate was rendered comparatively high by the occurrence of 22 deaths from cholera and enteric fever. *Meerut Division*, the annual admission rate 2362·7, is lower by 45·4, and the annual death rate 26·15, is higher than the corresponding rate for the previous year by ·16 per 1,000. The year was very unhealthy. Dysentery, diarrhœa, and hepatitis caused 22 deaths. There were only 4 deaths from cholera and 6 from enteric fever. Intemperance was very general, the batta money being freely expended. Delhi, Agra, Fatehgarh, and Meerut suffered largely from paroxysmal fevers. Chakrata, Roorkee, Muttra, which ordinarily are healthy stations, being occupied by small garrisons, afforded no relief to the general statistics. A great deal of the ague was imported by men who had contracted the disease either on field service or in the Punjab. *Sirhind Division*, the annual admission rate 1565·0, and the annual death rate 21·00, are lower than the corresponding rates for the previous year by 376·9 and 2·90 per 1,000 respectively. All the stations were healthy, but enteric fever, chiefly at Dugshai, caused 34 admissions and 13 deaths. Hepatitis, diarrhœa, and dysentery also prevailed considerably. *Lahore Division*, the annual admission rate 1897·8, and the annual death rate 23·53, are lower than the corresponding rates for the previous year by 951·5 and 3·96 per 1,000 respectively. There was no cholera and very little enteric fever. Dysentery, diarrhœa, and hepa-

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titis prevailed considerably, and intemperance is adduced as a common existing cause of disease. Mooltan, one of the hottest stations in Bengal, maintains its favourable repute for health, the death rate being only 8·56 per 1,000. At Meean Meer, which presents the highest sick rate, malarious fever was prevalent. *Rawul Pindi Division*, the annual admission rate 2232·4, and the annual death rate 27·74, are lower than the corresponding rates for the previous year by 339·9 and 20·14 per 1,000 respectively. Dysentery, diarrhœa, and hepatitis caused 22 deaths, enteric fever 8, and cholera 1. The transfer of the 18th Battery, 8th Brigade, Royal Artillery, from Aden to Attock was followed by much sickness, the cold of December being "very injurious." "The 'open canteen' system led to intemperance as the men "came back from the Cabul war with batta money." Sialkot remains the healthiest station in the division. *Peshawar District*, the annual admission rate 2812·1, and the annual death rate 49·74—"the highest figures of the year"—are lower than the corresponding rates for the previous year by 112·7 and 66·86 per 1,000 respectively. At Nowshera occurred 21 cases and 10 deaths from enteric fever. Cholera caused 8 deaths in the Peshawar garrison, nearly all the troops forming which had been on field service in Afghanistan, and were in an unfavourable condition of health on their return. Fevers of all kinds prevailed. The brigade which remained in garrison at Lundikotal and other Khyber posts also suffered severely from continued and paroxysmal fevers.

Troops on the March.—The annual admission rate 1306·0, is higher than that for the previous year by 172·2 per 1,000, while the annual death rate, 40·17, is lower by 63·08 per 1,000. Of 34 deaths from cholera many were attributable to the influences of the cantonment of Peshawar. Dysentery, diarrhœa, and hepatitis prevailed extensively and caused 22 deaths, enteric fever caused 3 deaths. Diseases of the nervous system caused 37 admissions and 6 deaths, which occurred during the arduous journey of the 15th Hussars towards Kandahar in August. A particular form of pneumonia as a complication of malaria was frequent among the troops in Afghanistan, causing a considerable number of admissions and six deaths. It did not disappear until the troops had again returned to barracks and the comfort of a warm and well furnished hospital building. The Principal Medical Officer remarks that "it "is a matter for sincere congratulation that the return march of 20,000 troops "and followers in successive brigades was effected through this unhealthy "district" (Peshawar) "at the most critical season and with clear indications "of epidemic disease in the neighbourhood at a comparatively trifling cost to "health and life." *Hill Depôts*, the annual admission rate 2009·1, and the annual death rate 20·88, are lower than the corresponding rates for the previous year by 170·7 and 2·47 per 1,000 respectively. "There was an entire "immunity from cholera during the year at all the Hill Depôts, there was "only a single death from enteric fever reported (Kasauli) and only two deaths "from dysentery, diarrhœa, and hepatitis combined. Tubercular diseases "gave 28 admissions and 6 deaths. . . . The mortality rate of the year "is especially favourable when it is remembered that 13 out of 32 deaths "were from general injuries out of hospital by the Naini Tal landslip on 18th "September 1880."

The Principal Medical Officer gives the following explanation of the discrepancies in the several strengths, admissions, and deaths in the table giving statistics by stations and that by divisions or districts. "The table of stations "has been collated from the annual return of regiments and those of divisions "from weekly returns. The table of divisions and districts is from commands "and by months. The figures in it are open to variation from movements of "troops by which a certain proportion of statistics is carried about instead of "being recorded by broader averages and by some inattention to details."

The prevalence of sickness and the mortality from the different classes of diseases in each of the administrative circles are shown in Abstract No. XVI., which is taken from the report of the Principal Medical Officer.

General Diseases.—In the *Presidency Division* the annual admission rate 771·8, and the annual death rate 4·68, exceed the corresponding rates for the previous year by 94·4 and 1·18 per 1,000 respectively. In the *Allahabad Division* the annual admission rate 816·7, is lower than that for the previous year by 191·0 per 1,000 while the annual death rate 20·34, is

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higher by 12·93 per 1,000. In the *Oudh Division* the annual admission rate 622·8, is lower than that for the previous year by 23·0 per 1,000, while the annual death rate 24·69, exceeds the corresponding rate for the previous year by 15·44 per 1,000. In the *Rohilcund District* the annual admission rate 688·4, is lower than that for the previous year by 26·1, while the annual death rate 12·53, is higher by 8·44 per 1,000. In the *Saugor District* the annual admission rate 1004·0, and the annual death rate 6·12, exceed the corresponding rates for the previous year by 273·9 and 4·00 per 1,000 respectively. In the *Gwalior District* the annual admission rate 1147·4, and the annual death rate 8·29, are lower than the corresponding rates for the previous year by 222·7 and 11·96 per 1,000 respectively. In the *Meerut Division* the annual admission rate 1413·3, and the annual death rate 6·89, are lower than the corresponding rates for the previous year by 160·7 and 5·49 per 1,000 respectively. In the *Sirhind Division* the annual admission rate 756·8, and the annual death rate 7·12, are lower than the corresponding rates for the previous year by 325·6 and 7·31 per 1,000 respectively. In the *Lahore Division* the annual admission rate 1104·9, and the annual death rate 5·58, are lower than the corresponding rates for the previous year by 849·6 and 8·64 per 1,000 respectively, In the *Rawal Pindi Division* the annual admission rate 1230·3, and the annual death rate 7·77, are lower than those for the previous year by 381·7 and 21·34 per 1,000 respectively. In the *Peshawar District* the annual admission rate 1935·7, and the annual death rate 20·92, are lower than those for the previous year by 117·5 and 70·96 per 1,000 respectively. Among *Troops on the March* the annual admission rate 599·5, and the annual death rate 19·66, are lower than those for the previous year by 26·5 and 65·41 per 1,000 respectively. At the *Hill Depôts* the annual admission rate 1107·7, and the annual death rate 5·87, are lower than those for the previous year by 51·6 and 4·04 per 1,000 respectively. *Bengal.*

In the *febrile group* the Presidency Division presents an annual admission rate of 664·1 and death rate of 3·51, which exceed the corresponding rates for the previous year by 115·7 and 1·41 per 1,000 respectively. In the Allahabad Division the annual admission rate 624·1, is lower than that for the previous year by 156·6 per 1,000, while the annual death rate 19·47, is higher by 13·54 per 1,000. In the *Oudh Division* the annual admission rate 433·8, is lower than that for the previous year by 77·3, while the annual death rate 23·47, is higher by 16·07 per 1,000. In the *Rohilcund District* the annual admission rate, 503·1, and the annual death rate 11·19, exceed the corresponding rates for the previous year by 35·5 and 8·27 per 1,000 respectively. In the *Saugor District* the annual admission rate 812·2, and the annual death rate 5·10, are higher than those for the previous year by 272·3 and 4·04 per 1,000 respectively. In the *Gwalior District* the annual admission rate 1036·7, and the annual death rate 6·51, are lower than those for the previous year by 199·5 and 10·93 per 1,000 respectively. In the *Meerut Division* the annual admission rate 1205·1, and the annual death rate 5·51, are lower than those for the previous year by 225·6 and 6·25 per 1,000 respectively. In the *Sirhind Division* the annual admission rate 579·3, and the annual death rate 6·44, are lower than those for the previous year by 322·0 and 6·75 per 1,000 respectively. In the *Lahore Division* the annual admission rate 926·9, and the annual death rate 4·03, are lower than the corresponding rates for the previous year by 907·9 and 9·24 per 1,000 respectively. In the *Rawal Pindi Division* the annual admission rate 1048·0, and the annual death rate 6·42, are lower than those for the previous year by 393·6 and 22·13 per 1,000 respectively. In the *Peshawar District* the annual admission rate 1752·9, and the annual death rate 18·95 are lower than the corresponding rates for the previous year by 187·5 and 71·32 per 1,000 respectively. Among *Troops on the March* the annual admission rate 447·4, and the annual death rate 18·80, are lower than those for the previous year by 92·9 and 65·62 per 1,000 respectively. At the *Hill Depôts* the annual admission rate 861·0, and the annual death rate 1·30, are lower than those for the previous year by 100·1 and 5·78 per 1,000 respectively.

In the *constitutional group* the annual admission rate of the *Presidency Division* 107·7, and the annual death rate 1·17, are lower than those for the previous year by 21·3 and ·23 per 1,000 respectively. In the *Allahabad Division* the annual admission rate 192·6, and the annual death rate ·87, are

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lower than those for the previous year by 34·4 and ·61 per 1,000 respectively. In the *Oudh Division* the annual admission rate 189·0, exceeds that for the previous year by 54·3, while the annual death rate 1·22, is lower by ·63 per 1,000. In the *Rohilcund District* the annual admission rate 185·3, is lower than that for the previous year by 61·6, while the annual death rate 1·34, is higher by ·17 per 1,000. In the Saugor District the annual admission rate 191·8, is higher than that for the previous year by 1·6, and the annual death rate 1·02, is lower by ·04 per 1,000. In the *Gwalior District* the annual admission rate 110·7, and the annual death rate 1·78 are lower than those for the previous year by 23·2 and 1·03 per 1,000 respectively. In the *Meerut Division* the annual admission rate 208·2, and the annual death rate 1·38, exceed the corresponding rates for the previous year by 64·9 and·76 per 1,000 respectively. In the *Sirhind Division* the annual admission rate 177·5, is higher than that for the previous year by 56·4, while the annual death rate ·68, is lower by ·56 per 1,000. In the *Lahore Division* the annual admission rate 178·0, and the annual death rate 1·55, are higher than those for the previous year by 58·3 and ·60 per 1,000 respectively. In the *Rawal Pindi Division* the annual admission rate 182·3, and the annual death rate 1·35, exceed those for the previous year by 11·9 and ·79 per 1,000 respectively. In the *Peshawar District* the annual admission rate 182·8, and the annual death rate 1·97, are higher than those for the previous year by 70·0 and ·36 per 1,000 respectively. Among *Troops on the March* the annual admission rate 152·1, and the annual death rate ·86, are higher than those for the previous year by 66·4 and ·21 per 1,000 respectively. At the *Hill Depôts* the annual admission rate 246·7, and the annual death rate 4·57, exceed the corresponding rates for the previous year by 48·5 and 1·74 per 1,000 respectively.

Eruptive Fevers.—In the *Presidency Division* the annual admission rate 1·7, exceeds by 1·0 per 1,000 that for the previous year. In the Allahabad Division the annual admission rate ·9, gives a fractional decrease. In the *Oudh Division* the annual admission rate ·4, is lower than that for the previous year by 1·1 per 1,000. In the *Rohilcund District* the annual admission rate ·4 per 1,000, contrasts with *nil* for the previous year. In the *Saugor District*, *nil* contrasts with the admission rate of 2·1 per 1,000 for the previous year. In the *Gwalior District*, *nil* contrasts with ·6 per 1,000 for the previous year. In the *Meerut Division* the annnal admission rate 2·7, is lower than that for the previous year by 20·0 per 1,000. In the *Sirhind Division* the annual admission rate 1·4, is lower than that for the previous year by 4·0 per 1,000. In the *Lahore Division* the annual admission rate ·3, is lower than that for the previous year by 3·5 per 1,000. In the *Rawal Pindi Division* the admission rate ·3, is lower than that for the previous year by 3·3 per 1,000. In the *Peshawar District* the admission rate ·4, is lower than that for the previous year by 2·3 per 1,000. Among *Troops on the March* no admissions occurred during either year. At the *Hill Depôts* the admission rate, *nil*, contrasts with 1·4 per 1,000 for the previous year.

Continued Fevers.—In the *Presidency Division* the annual admission rate 127·0, is lower than that for the previous year by 135·3 per 1,000, and the death rate *nil*, contrasts with ·70 per 1,000 for the previous year. In the *Allahabad Division* the annual admission rate 236·2, exceeds that for the previous year by 25·5 per 1,000, while the death rate 2·62 per 1,000, is lower by a small fraction. In the *Oudh Division* the annual admission rate 91·9, is lower than that for the previous year by 179·8 per 1,000, while the annual death rate 7·69, is higher by 2·88 per 1,000. In the *Rohilcund District* the annual admission rate 165·6, and the annual death rate 5·82, are higher than the corresponding rates for the previous year by 58·8 and 4·07 per 1,000 respectively. In the *Saugor District* the annual admission rate 238·8, exceeds that for the previous year by 192·0 per 1,000, and the death rate 3·06 per 1,000, contrasts with *nil* for the previous year. In the *Gwalior District* the annual admission rate 125·4, and the annual death rate 1·78, are lower than the corresponding rates for the previous year by 126·0 and 2·72 per 1,000 respectively. In the *Meerut Division* the annual admission rate 277·7, exceeds that for the previous year by 101·0, while the annual death rate 2·75, is lower than that for the previous year by 2·51 per 1,000. In the *Sirhind Division* the annual admission rate 82·0, is lower than that for the previous year by 42·0, while the annual death rate 4·40, is higher by 1·10 per 1,000. In the

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Lahore Division the annual admission rate 192·3, exceeds that for the previous year by 80·5 per 1,000, while the annual death rate 1·86 per 1,000, is lower by a small fraction. In the *Rawal Pindi Division* the annual admission rate 233·4, exceeds that for the previous year by 84·2, while the annual death rate 3·04, is lower than that for the previous year by 6·20 per 1,000. In the *Peshawar District* the annual admission rate 172·9, is lower than that for the previous year by 326·3, while the annual death rate 6·32, is higher by ·41 per 1,000. Among *Troops on the March* the annual admission rate 92·3, exceeds that for the previous year by 6·6, while the annual death rate 1·71, is lower by 2·19 per 1,000. At the *Hill Depôts* the annual admission rate 25·5, and the annual death rate ·65, are lower than the corresponding rates for the previous year by 21·2, and ·77 per 1,000 respectively. *Bengal.*

In Abstract No. XVII. will be found a table taken from the report of the Principal Medical Officer, showing the stations in the Bengal Command at which the admissions and deaths from enteric fever took place in each of the four quarters of the year 1880. The total number of cases is given as 278 and of deaths 94. The number of cases given in the earlier part of this Report as extracted from the annual returns is 253 and of deaths 95. A similar discrepancy was observed upon in the report for the previous year, and the explanation therein given may be considered to apply to the discrepancy noted above, namely, that the numbers in the Abstract are compiled from the monthly returns while those previously quoted are from the revised and corrected annual returns.

As was done in the report for the previous year, the following rates are calculated on the numbers in Abstract XVII., and the strengths of the several divisions given in Abstract XVI. In the *Presidency Division* only one admission and no death occurred, giving the annual admission rate of ·06 per 1,000, and death rate *nil*. In the *Allahabad Division* the number of admissions was 21 and of deaths 8, giving the respective annual rates of 6·10 and 2·32 per 1,000. In the *Oudh Division* 44 cases and 18 deaths caused the admission and death rate of 17·80 and 7·28 per 1,000 respectively. In the *Rohilcund District* the admissions were 84 and the deaths 12, giving the respective annual rates of 37·60 and 5·37 per 1,000. In the *Saugor District* 6 cases and 2 deaths caused the admission and death rate of 6·12 and 2·04 per 1,000 respectively. In the *Gwalior District* 5 cases and 2 deaths caused the admission and death rate of 2·96 and 1·18 per 1,000 respectively. In the *Meerut Division* 16 cases, of which 5 were fatal, caused the admission and death rate of 5·50 and 1·72 per 1,000 respectively. In the *Sirhind Division* 34 cases, 13 having terminated fatally, caused the admission and death rate of 11·52 and 4·40 per 1,000 respectively. In the *Lahore Division* 5 admissions and 5 deaths caused the respective annual rate of 1·55 per 1,000. In the *Rawal Pindi Division* 17 cases, 8 being fatal, caused the admission and death rate of 5·75 and 2·71 per 1,000 respectively. In the *Peshawar Division* the admission rate was 13·0 and the death rate 6·32 per 1,000, the number of cases having been 33 and of deaths 16. Among *Troops on the March* the occurrence of 10 cases and 3 deaths caused the admission and death rate of 4·27 and 1·28 per 1,000 respectively.

The aggregate strength of the several bodies of troops above referred to having been 29,443, the number of cases of enteric fever 276, and of deaths from that disease 93, the resultant annual admission and death rates are respectively 9·37 and 3·16 per 1,000.

Taking the total average annual strength of British Troops in Bengal 30,656, the number of cases of enteric fever according to the general annual return of sickness and mortality 253, and of deaths from that disease 95, the total annual admission rate from enteric fever is 8·25 and of deaths 3·10 per 1,000. Compared with the corresponding rates for the previous year, as given in a table drawn up by the late Dr. Bryden, in page 242 of the Report of the Army Medical Department for 1879, the rates above given are lower by ·47, ·39 per 1,000 respectively.

According to the annual return furnished by the Principal Medical Officer, the average annual strength of troops at the hill depôts was 1,532; the number of cases of enteric fever among them was 4, of which 1 was fatal. The resultant annual admission and death rates are therefore 2·61 and ·65 per 1,000 respectively.

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In the *Rohilcund District*, which furnishes the highest annual admission rate, and the third highest death rate from enteric fever, fully two thirds of the cases and all the deaths occurred in the 30th Regiment which having landed at Bombay on 9th February, arrived at Bareilly by rail on the 17th. On the 1st January there were on the strength of the battalion 1,027 non-commissioned officers and men, of whom 794 were under 25 years of age. On the 10th of April the head-quarters marched for Ranikhet and arrived there on the 26th. Six of the marches were through the Serai where malaria was rife. "We could "smell it and it stuck to one's tongue, was the graphic expression of an "officer." The line of march had not been traversed during the same season by British troops for 20 years previously. Four cases of enteric fever and one death had occurred before leaving Bareilly. Sore throat had been very prevalent among the men. Several cases of remittent fever "of a severe form," and four of enteric fever, two being fatal, occurred during the march. The disease clung to the head-quarters wing after arrival at Ranikhet; enteric fever prevailed also among the detached companies remaining at Bareilly, Shahjehanpore, and Moradabad. The total strength of the regiment was almost equally divided between Ranikhet and the plains. Of the total number of 65 cases and 13 deaths, 30 of the former occurred in the plains and 35 at Ranikhet, and of the latter 6 occurred in the plains and 7 at Raniket. Of the total number of cases and deaths in the district, 69 of the former and all of the latter occurred in the second quarter.

The *Oudh Division* presents the second highest admission rate and the highest death rate. Lucknow and Sitapur were the stations chiefly affected. Of the total number of 44 cases, 18 occurred in the second quarter, 16 in the fourth, 9 in the third, and 1 in the first. The deaths were 11 in the second quarter, 6 in the fourth, and 1 in the third.

In the *Peshawar Division* occurred the third highest admission rate and the second highest death rate. The disease was almost limited to Nowshera and Cherat and occurred chiefly in the 8th Hussars, 12th, and 14th Regiments. In the case of the 8th Hussars the disease was supposed to have been contracted on the march from Pesh-bolock. Of the 21 cases at Nowshera 10 occurred in the second quarter, 6 in the third, 3 in the first, and 2 in the fourth quarter. The deaths were 5 in the third quarter, 4 in the second, and 1 in the fourth. At Cherat the 9 cases and 2 deaths all occurred in the third quarter.

Of the total number of 278 cases enumerated in the abstract, 129 occurred in the second quarter, 61 in the third, 55 in the fourth, and 33 in the first quarter. Of the 94 deaths, 44 occurred in the second quarter, 26 in the fourth, 20 in the third, and 4 in the first quarter.

Paroxysmal Fevers.—In the *Presidency Division* the annual admission rate 532·5, and death rate 3·51, exceed the corresponding rates for the previous year by 252·7 and 2·11 per 1,000 respectively. In the *Allahabad Division* the annual admission rate 363·7, and death rate 1·16, are lower than those for the previous year by 202·1 and ·62 per 1,000 respectively. In the *Oudh Division* the annual admission rate 314·0, exceeds that for the previous year by 81·6 per 1,000, while the death rate *nil*, contrasts with 1·85 per 1,000 for the previous year. In the *Rohilcund District* the annual admission rate 329·9, and death rate ·90, are respectively lower than those for the previous year by 30·3 and ·27 per 1,000. In the *Saugor District* the annual admission rate 568·3, and death rate 2·04, exceed those for the previous year by 80·5 and ·98 per 1,000 respectively. In the *Gwalior District* the annual admission rate 905·9, and death rate 2·95, as compared with the rates for the previous year show a decrease of 67·7 and 2·11 per 1,000 respectively. In the *Meerut Division* the annual admission rate 915·7, and death rate, 1·38, are lower than those for the previous year by 310·5 and 2·02 per 1,000 respectively. The *Sirhind Division* presents an annual admission rate of 487·8, and death rate 1·36 per 1,000, which are lower than the rates for the previous year by 330·0 and ·29 per 1,000 respectively. In the *Lahore Division* as compared with the previous year the admission rate 730·0, is lower by 973·9 per 1,000, while the death rate 1·86, is higher by 1·23 per 1,000. In the *Rawal Pindi Division* the annual admission rate 803·8, and death rate 3·04, are lower than those for the previous year by 460·7 and ·88 per 1,000 respectively. In the *Peshawar Division* the annual admission rate 1,560·6, and death rate 8·69, exceed the corresponding rates for the previous year by 229·6 and 1·70 per 1,000 respectively. Among *Troops*

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on the March, the annual admission rate 332·5, exceeds that for the previous year by 39·0, while the death rate 2·56, is lower by ·69 per 1,000. At the *Hill Depôts* the annual admission rate 824·4, and death rate ·65, are lower than the corresponding rates for the previous year by 71·6 and 1·47 per 1,000 respectively. *Bengal.*

Cholera.—A table showing the stations in the Bengal Command at which the admissions and deaths from cholera took place in each of the four quarters of the year is given in Abstract No. XVIII. The total numbers exceed those given in the annual return (Abstract No. XIV.) by four cases and three deaths, but agree with those given in Abstract No. XVI., on the strength and the number of cases and deaths given in which, in the respective divisions, the following rates are calculated.

In the *Presidency Division* no admission or death occurred, the admission rate for the previous year having been ·7 per 1,000. In the *Allahabad Division* the occurrence of 74 cases and 53 deaths caused an annual admission rate of 21·5 and death rate of 15·40, which exceed the corresponding rates for the previous year by 18·5 and 14·21 per 1,000 respectively. In the *Oudh Division* the number of cases was 60 and of deaths 38, giving the respective rates of 24·3 and 15·38, as compared with the previous year the former is higher by 23·6 and the latter contrasts with *nil*. In the *Rohilcund District* there were 14 cases and 10 deaths, giving the respective annual rates of 6·3 and 4·47 per 1,000, each of which contrasts with *nil* for the previous year. In the *Saugor District* occurred 1 case and no death, the admission rate, 1·0 per 1,000, contrasts with *nil* for the previous year, during which also no death had occurred. In the *Gwalior District* occurred 6 cases and 3 deaths, giving the respective annual rates of 3·6 and 1·78, which are lower than those for the previous year by 6·5 and 5·53 per 1,000 respectively. In the *Meerut Division* the cases amounted to 4 and the deaths to 4, which give the respective annual rates of 1·4 and 1·38, being lower than the corresponding rates for the previous year by 2·3 and 1·71 per 1,000 respectively. In the *Sirhind Division* no case or death occurred, the annual rate under each heading for the previous year having been 10·3 and 8·24 per 1,000. In the *Lahore Division* also no case or death occurred, the admission and death rate for the previous year having been 12·0 and 10·43 per 1,000 respectively. In the *Rawal Pindi Division* occurred 2 cases and 1 death, giving the annual rates of ·7 and ·34, which are lower than the rates for the previous year by 17·8 and 14·77 per 1,000 respectively. In the *Peshawar Division* the cases amounted to 11 and the deaths to 9, giving the annual rates of 4·4 and 3·55, which are lower than the corresponding rates for the previous year by 101·7 and 73·83 per 1,000 respectively. Among *Troops on the March* occurred 41 cases and 34 deaths, giving the annual rates of 17·5 and 14·53, which are lower than the corresponding rates for the previous year by 143·5 and 62·74 per 1,000 respectively. At the *Hill Depôts* neither case nor death occurred, the rates under each heading for the previous year having been 9·9 and 3·54 per 1,000 respectively.

The disease first manifested itself during the second quarter by the occurrence of 16 cases and 12 deaths, distributed among the Allahabad, Oudh, and Meerut Divisions. During the third quarter 156 cases and 108 deaths occurred, chiefly in the Allahabad and Oudh Divisions, and among troops on the march, no case or death occurred in the Meerut Division. During the fourth quarter 41 cases and 32 deaths occurred, chiefly among the troops stationed at Lucknow, and those on the march, the Meerut Division again continuing free. During the first quarter no case or death had occurred.

Rheumatism.—As compared with the previous year an increase in the rate of admissions occurred in the following divisions and districts, and at the following rates per 1,000. *Presidency* 12·1, *Meerut* 14·4, *Sirhind* 39·2, *Lahore* 5·6, *Rawul Pindi* 5·3, *Peshawur* 9·1, and *Troops on the March* 4·7. A decrease occurred as follows:—*Allahabad* 15·7, *Oudh* 4·5, *Rohilcund* 27·1, *Saugor* 2·3, *Gwalior* 4·3, *Hill Depôts* 16·9. In the annual death rate the *Lahore Division* and the *Hill Depôts* present a decrease of ·32 and ·71 per 1,000 respectively, the rate in each for the year under report having been *nil*. In the *Peshawur Division* the death rate ·39 per 1,000 contrasts as increase with *nil* for the previous year.

Primary Syphilis.—As compared with the previous year an increase in the rate of admissions occurred in the following divisions and districts at the

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following rates per 1,000 :—*Oudh* 39·4, *Saugor* 7·6, *Gwalior* 2·0, *Meerut* 58·2, *Sirhind* 8·0, *Lahore* 54·8, *Peshawur* 74·1, *Troops on the March* 57·2, and *Hill Depôts* 54·2. A decrease occurred as follows :—*Presidency* 24·9, *Allahabad* 9·2, *Rohilcund* 11·3, *Rawul Pindi* 3·8. No death occurred during either year.

Secondary Syphilis.—As compared with the previous year a decrease in the rate of admissions occurred in the following divisions and districts at the following rates per 1,000 :—*Presidency* 5·3, *Allahabad* 7·4, *Rohilcund* 20·3, *Saugor* 3·1, *Gwalior* 21·2, *Meerut* 5·9, *Lahore* ·5, *Peshawar* 6·4. An increase occurred as follows :—*Oudh* 18·1, *Sirhind* 13·3, *Rawal Pindi* 5·5, on the March 5·3, and *Hill Depôts* 1·5. In the annual death rate the *Oudh and Peshawar Divisions* present a decrease of ·37 and ·54 per 1,000, respectively; in the *Gwalior District* the occurrence of 1 death caused a death rate of ·59, which contrasts with *nil* for the previous year.

Tubercular Diseases.—As compared with the previous year an increase in the rate of admission occurred in the following divisions and districts at the following rates per 1,000 :—*Oudh* 1·2, *Rohilcund* 4·9, *Saugor* 2·9, *Gwalior* 1·4, *Rawal Pindi* 3·4, *on the March* ·8, and at Hill Depôts 4·1. A decrease occurred as follows :—*Presidency* 2·1, *Allahabad* 2·2, *Meerut* 1·8, *Sirhind* 4·7, *Lahore* ·2, and *Peshawar* 3·1. The annual death rate shows a decrease as follows : *Allahabad* ·32, *Saugor* ·04, *Gwalior* 1·06, *Sirhind* 1·24, and an increase, *Presidency* ·47, *Oudh* ·11, *Rohilcund* ·17, *Meerut* ·07, *Rawal Pindi* ·79, *Lahore* ·92, *Peshawar* ·51, *on the March* ·43, and *Hill Depôts* 1·80 per 1,000.

Scurvy and Purpura.—As compared with the previous year a decrease in the admission rate per 1,000 occurred in the following divisions and districts at the following rates :—*Allahabad* ·3, *Saugor* 2·2, *Sirhind* ·1, *Lahore* 1·3, *Peshawar* ·5, and *Hill Depôts* ·1. An increase of ·6 occurred in the *Gwalior District*, and of ·7 in the *Rawal Pindi Division*. No cases occurred in any other division or district. In the annual death rate an apparent decrease of ·29 per 1,000 occurred in the Allahabad Division, but, as explained in the report for last year, the death referred to probably occurred during the last few days of 1878, intervening between closure of the monthly return on the last Friday of that year and the 1st January 1879, so that actually no death occurred during either year.

Other Diseases.—In the report for the previous year anæmia was the chief cause of admission, and so does it continue to be in this, but without having caused any death. The detail under this heading, however, is subject to such variations from year to year that little practical information would result from comparison of rates of prevalence in the several divisions.

Local Diseases.—*Diseases of the Nervous System.*—The general annual admission rate under this heading is identical with that for the previous year; the following variations as compared with the results for the previous year occurred in the several divisions and districts, an increase in *Rohilcund* of 7·5, *Saugor* 8·3, *Lahore* 4·5, *Rawal Pindi* 7·4, *Peshawar* 2·0, and a decrease in the *Presidency* of 3·0, *Allahabad* 1·9, *Oudh* 6·1, *Gwalior* 1·0, Meerut 1·7, *Sirhind* 9·0, on the March 9·5, and Hill Depôts 6·8. The death rate as compared with the returns for the previous year shows a decrease in *Allahabad* 2·41, *Oudh* 1·34, *Rohilcund* 1·89, *Saugor* ·17, *Gwalior* 1·59, *Rawal Pindi* ·42, and *on the March* 6·53, and an increase in the *Presidency* ·47, *Meerut* ·76, *Sirhind* 1·55, *Lahore* 3·65, and *Peshawar* ·17; at the *Hill Depôts* no death occurred during either year.

Diseases of the Eye.—The general admission rate is fractionally less than that for the previous year, the following variations occurred :—A decrease in the *Presidency* 6·7, *Allahabad* 3·3, *Oudh* 10·4, *Saugor* 1·6, *Sirhind* ·6, *Peshawar* 1·7, and *Hill Depôts* 12·1; an increase in *Rohilcund* 4·7, *Gwalior* 4·4, *Meerut* 4·4, *Lahore* 6·6, *Rawal Pindi* 2·2, and *on the March* 8·4.

Diseases of the Circulatory System. As compared with the results for the previous year the admission rates in the several divisions present the following variations :—A decrease in the *Presidency* 19·2, *Allahabad* 11·2, *Oudh* 3·7, *Rohilcund* 4·9 *Saugor* ·2, *Meerut* 3·8, *Sirhind* 1·1, and at the *Hill Depôts* 4·8. An increase in *Gwalior* 4·3, *Lahore* ·1, *Rawal Pindi* 7·7, *Peshawar* 4·4, and *on the March* 4·9. The variations in the death rate are :—A decrease in *Gwalior* of·53, *Rawal Pindi* ·50, and *Hill Depôts* ·77; an increase in the *Presidency* ·47, *Allahabad* ·29 contrasts with *nil*, *Rohilcund* ·90 contrasts with *nil*,

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Meerut ·10, *Sirhind* ·19, *Lahore* ·30, *Peshawur* ·25 and *on the March* ·63, in *Oudh* no death occurred during either year. *Bengal.*

Diseases of the Respiratory System. The admission rate as compared with the previous year shows a decrease in *Allahabad* of 13·7, *Gwalior* 23·0, *Lahore* 12·4, and *Rawal Pindi* 17·6, and an increase in the *Presidency* 10·2, *Oudh* 7·2, *Rohilcund* 12·5, *Saugor* 2·7, *Meerut* 12·7, *Sirhind* 12·4, *Peshawar* 1·0, *on the March* 24·4, and at *Hill Depôts* 1·1. The death rate is higher in the *Presidency* by 2·34 as against *nil* for the previous year, *Allahabad* ·87, *Rohilcund* ·45, as against *nil*, *Meerut* 1·48, and *Sirhind* 1·28, and lower in *Oudh* by ·34, *Saugor* ·04, *Gwalior* 2·25, *Lahore* ·69, *Rawal Pindi* ·61, *Peshawar* ·32, *on the March* ·69, and at the *Hill Depôts* ·16.

Diseases of the Digestive System.—Compared with the results for the previous year the admission rate is lower in the following divisions :—*Presidency* 63·4, *Allahabad* 43·0, *Sirhind* 29·1, *Lahore* 94·8, *Rawal Pindi* 19·7, *Peshawar* 18·8, and *Hill Depôts* 30·0; and higher in *Oudh* 12·6, *Rohilcund* 41·5, *Saugor* 48·2, *Gwalior* 8·0, *Meerut* 73·5, and *on the March* 71·0. The death rate is higher in *Presidency* ·82, *Oudh* 1·49. *Rohilcund* ·79, *Saugor* 1·02, *Meerut* 3·00, *Sirhind* 1·41, *Lahore* 1·17, *Peshawar* 3·24, and *on the March* 6·80, and lower in *Allahabad* 3·90, *Gwalior* 6·64, *Rawal Pindi* ·28, and at the *Hill Depôts* 4·47.

Abstract No. XIX. contains a statement of the prevalence of dysentery, diarrhœa, and hepatitis in each of the divisions of the Bengal Command, and the deaths caused thereby, and Abstract No. XX. shows the prevalence of and mortality from the same diseases in each quarter of the year in the Bengal Command.

Diseases of the Urinary System.—Compared with the results for the previous year gonorrhœa caused a lower admission rate, in *Allahabad* 23·6, *Oudh* 30·0, *Rohilcund* 59·5, *Saugor* 1·8, *Meerut* 20·4, *Lahore* 4·6, *Peshawar* 10·8, and *Hill Depôts* 30·2; and a higher admission rate *Presidency* 8·6, *Gwalior* 11·8, *Sirhind* 7·7, *Rawal Pindi* 1·3, and *on the March* 26·6. The *sequelæ of gonorrhœa* caused a lower admission rate, *Presidency* 3·1, *Allahabad* 1·9, *Rohilcund* 1·8, *Gwalior* 2·8, *Meerut* 3·8, *Sirhind* 1·3, *Lahore* 3·7, and *on the March* ·2; and a higher admission rate, *Oudh* 1·2, *Saugor* 2·9, *Rawal Pindi* 4·5, *Peshawar* ·1, and *Hill Depôts* 8·5. No death under these headings occurred during either year. Under "other diseases" a decrease of admission rate as compared with the previous year occurred in *Presidency* 7·9, *Allahabad* 2·0, *Rohilcund* 8·7, *Gwalior* 5·1, *Meerut* 6·8, *Lahore* 1·2, *Rawal Pindi* 3·5, *Peshawar* ·8, and *Hill Depôts* 11·1; and an increase, *Oudh* 4·5, *Saugor* 20·2, *Sirhind* 5·4, and *on the March* 5·3. In the death rate a decrease occurred in *Allahabad*, ·59 for previous year contrasting with *nil* for year under report; *Rohilcund* ·58 for previous year stands against *nil* for year under report; *Lahore* ·01; *Rawal Pindi* ·28 for previous year against *nil* for year under report, and *Hill Depôts* ·06. An increase occurred, *Oudh* ·40 against *nil* for the previous year, *Gwalior* ·03, *Meerut* ·38, and Sirhind ·34 against *nil* for the previous year. In the other divisions and districts no death occurred under this heading during either year.

Diseases of the Cutaneous System.—As compared with the previons year an increase in the rate of admissions occurred in the *Presidency* 2·3, *Allahabad* 6·0, *Gwalior* 25·4, *Meerut* 7·1, *Lahore* 17·7, *Rawal Pindi* 20·7, *Peshawar* 8·5, *on the March* 14·7, and *Hill Depôts* 8·2. A decrease occurred in *Oudh* 40·2, *Rohilcund* ·4, *Saugor* 6·8, and *Sirhind* 24·7. No death occurred during either year.

Conditions.—*Debility.*—A decrease of admission rate as compared with the previous year occurred in the *Presidency* 11·3, *Rohilcund* 8·1, *Saugor* 12·3, *Gwalior* 30·9, *Sirhind* 11·8, *Lahore* 11·2, *Rawal Pindi* 23·8, *Peshawar* 29·2, and *Hill Depôts* 19·2. An increase in *Allahabad* 1·0, *Oudh* 5·2, *Meerut* 22·1, and *on the March* 7·2. An increase of death rate occurred in *Sirhind* ·34, contrasts with *nil* for the previous year, *Rawul Pindi* ·34 against *nil* for previous year, *Peshawur* ·25, and *on the March* ·43 against *nil* for the previous year; a decrease to *nil* occurred in the *Presidency* from ·70 for the previous year, *Meerut* to *nil* against ·31 for the previous year, *Lahore* to *nil* against ·32 for the previous year, and at the *Hill Depôts* to *nil* against ·71 for the previous year. In the remaining divisions no death occurred during either year.

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POISONS.—The admission rate is higher than for the previous year, in *Oudh* 2·5, *Rohilcund* ·8, *Saugor* 3·0, *Meerut* 1·8, *Rawul Pindi* ·4, and *Peshawar* 9·0, and lower in the *Presidency* 1·4, *Allahabad* 3·3, *Gwalior* ·4, *Sirhind* 3·6, *Lahore* 1·4, *on the March* ·2, and at *Hill Depôts* 2·1. The death rate is higher *on the March* by 1·48, and lower in the *Presidency* by ·11, *Meerut* ·28, *Lahore* ·01, *Rawal Pindi* ·16, and at *Hill Depôts* ·71. In *Allahabad* the death rate is identical with that for the previous year, and in the remaining divisions no death occurred during either year.

Officers.

The average annual strength of commissioned officers on the Bengal establishment serving in the Command throughout the year was 1,048, and in England or beyond sea 181, giving a total of 1,229. The number of cases of sickness among those in Bengal was 786, giving the annual rate of 750·0 per 1,000, which is lower than the corresponding rate for the previous year by 29·2. The number of deaths in the Command was 33, and in England or elsewhere 11, being a total of 44, which to the total strength gives the annual death rate of 35·80, which is lower than that for the previous year by 3·43 per 1,000. The principal cases were :—Ague 159, simple continued fever 72, febricula 36, remittent fever 30, enteric fever 6, chicken-pox 4, cholera 3, measles 1, diphtheria 1, rheumatism 21, gout 4, primary syphilis 17, secondary 4, sunstroke 4, epilepsy 2, paralysis 3, apoplexy 1, neuralgia 6, hypertrophy of heart 1, valvular disease 1, diarrhœa 47, dyspepsia 31, dysentery 26, hepatitis 20, simple enlargement of liver 8, jaundice 8, abscess of liver 1, peritonitis 1, gonorrhœa 8, boil 26, ulcer 8, debility 29, alcoholic poisoning 1, contusion 49, sprain 30, fracture 6, fracture of skull 1, concussion of brain 5, wound 4, dislocation 3. The causes of death were, in Bengal, enteric fever 3, remittent fever 2, cholera 1, cancer of stomach 1, apoplexy 1, sunstroke 2, hypertrophy of heart 1, dysentery 2, abscess of liver 2, multiple injury 9, concussion of brain 3, fracture of skull 2, gunshot wound 1, battle 2, not known 1; the deaths in England or elsewhere were phthisis pulmonalis 2, abscess of liver 2, not known 7.

Women.

The average annual strength was 2,104, the admissions, including 449 from childbirth, were 2,418 and deaths 44, giving the annual rates of 1149·2 and 20·91, which are lower than the corresponding rates for the previous year by 128·3 and 3·87 per 1,000 respectively. The principal cases were :—Ague 407, simple continued fever 142, febricula 47, remittent fever 25, cholera 10, measles 8, enteric fever 8, erysipelas 7, scarlet fever 2, mumps 2, dengue 1, rheumatism 22, phthisis pulmonalis 10, anæmia 13, hysteria 8, epilepsy 4, sunstroke 2, neuralgia 10, conjunctivitis 119, valvular disease of heart 6, palpitation 3, bronchitis 23, pneumonia 4, pleurisy 1, diarrhœa 91, dysentery 55, dyspepsia 88, hepatitis 36, abscess of liver 2, simple enlargement of liver 4, jaundice 2, splenitis 6, congestion of spleen 4, tænia solium 2, enteritis 1, peritonitis 1, Bright's disease 4, childbirth 449, abortion 45, premature labour 5, metro-peritonitis 1, ulcer 14, boil 6, debility 500, delirium tremens 1, contusion 10, wounds 4, sprain 3. The causes of death were, enteric fever 3, remittent fever 3, simple continued fever 1, cholera 7, erysipelas 2, phthisis pulmonalis 5, sunstroke 1, valvular disease of heart 2, bronchitis 2, pneumonia 1, dysentery 3, diarrhœa 2, hepatitis 1, abscess of liver 2, premature labour 1, childbirth 3, metro-peritonitis 1, debility 4.

Children.

The average annual strength was 3,898, the number of admissions was 2,767 and of deaths 228. These numbers give the annual admission rate of 709·8 and death rate 58·49, which are lower than the corresponding rates for the previous year by 126·0 and 15·91 per 1,000 respectively. The principal causes of admission were:—Ague 360, simple continued fever 171, measles 135, whooping cough 72, febricula 55, remittent fever 47, chicken-pox 21, diphtheria 15, cholera 12, mumps 10, enteric fever 7, scarlet fever 4, erysipelas 3, small-pox 2, influenza 1, rheumatism 6, scrofula 5, epithelial cancer 1, tabes mesenterica 21,

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anæmia 33, tubercular meningitis 2, convulsions 51, meningitis 5, sunstroke 3, epilepsy 1, conjunctivitis 432, catarrhal ophthalmia 23, tarsal ophthalmia 23, bronchitis 92, bronchial catarrh 22, croup 23, pneumonia 5, teething 128, tonsillitis 32, thrush 11, ulcerated throat 1, diarrhœa 289, dysentery 67, dyspepsia 7, hepatitis 3, jaundice 2, splenitis 8, inflammation of mesenteric glands 1, abscess of cellular tissue 21, boil 19, eczema 17, ulcer 11, tinea tonsurans 4, itch 1, debility 353, premature birth 1, burns 10, wounds 9, contusion 8, sprain 8. The causes of death were:—Measles 5, simple continued fever 2, remittent fever 12, cholera 6, diphtheria 8, whooping cough 1, cancer 1, scrofula 2, phthisis pulmonalis 1, tabes mesenterica 10, tubercular meningitis 3, anæmia 1, meningitis 4, sunstroke 1, convulsions 46, anæsthesia 1, croup 10, bronchitis 9, pneumonia 4, thrush 1, teething 17, ulcerated throat 1, tonsillitis 1, dysentery 9, diarrhœa 31, splenitis 1, inflammation of mesenteric glands 1, abscess of cellular tissue 1, boil 1, premature birth 4, debility 27, burns 1, asphyxia by drowning 1, fracture of skull 1. *Bengal.*

Invaliding.

The total number of non-commissioned officers and men sent home to England as invalids was 782, being at the rate of 25·51 per 1,000, which is lower than the corresponding rate for the previous year by 18·15 per 1,000. The number finally discharged the service was 699, being at the rate of 22·80 per 1,000, which is less than the corresponding rate for the previous year by 2·26 per 1,000.

Under the *Febrile Group* of general diseases the number of invalids was 57, giving the rate of 1·86 per 1,000, which is less than the corresponding rate for the previous year by 4·22 per 1,000. The decrease is almost confined to the class of paroxysmal fevers.

Under the *Constitutional Group* the number of invalids was 102, giving the rate of 3·32 per 1,000, which is lower than the corresponding rate for the previous year by 2·89 per 1,000, The decrease is most apparent in the class of tubercular diseases.

Under *Local Diseases* the number of invalids was 362, giving the annual rate of 11·82 per 1,000, which is lower than the corresponding rate for the previous year by 7·71 per 1,000. The decrease occurs chiefly under affections of the digestive system.

Under *Debility* the number of invalids was 231, giving the rate of 7·53 per 1,000, which is lower than that for the previous year by 3·39 per 1,000.

Under *Local Injuries* the number invalided was 21, and from wounds received in action 8, giving the total number of 29, being at the rate of ·95 per 1,000, which exceeds the corresponding rate for the previous year by a small fraction.

The total rate of invaliding is less than the average for the 10 years 1870–79 by 15·74 per 1,000, and the total proportion of invalids finally discharged the service exceeds the 10 years' average by 6·70 per 1,000.

Mean Daily Sick.

The average daily number of sick throughout the year was 2176·15, being at the rate of 70·99 per 1,000, which is lower than the corresponding rate for the previous year by 5·61 per 1,000, but exceeds the average for the 10 years 1870–79 by 12·30 per 1,000. The average sick time to each soldier was 25·98 days, which is less than the corresponding period for the previous year by 1·98 days. The average duration of each case of sickness, 14·74 days, exceeds by ·94 the corresponding period for the previous year.

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II.—Madras.

STATISTICAL REPORT.

Madras.

In an average annual strength of 10,280 non-commissioned officers and men there were 14,084 admissions into hospital and 108 deaths, including those of eight invalids who died either during the homeward voyage or after arrival in England. The annual admission rate 1370·0, and the annual death rate 10·51 per 1,000 are lower than the corresponding rates for the previous year by 32·6 and 7·19 per 1,000 respectively. Compared with the respective averages for the ten years from 1870 to 1879, the admission rate is higher by 147·5 and the death rate lower by 8·46 per 1,000.

The Principal Medical Officer attributes the comparatively more favourable health results of the year under report to the fact of "the graver kinds of "epidemic sickness having been at a zero of prevalence."

The admissions and deaths in the different classes and orders of diseases are shown in Abstract No. XXII.

General Diseases.—The total number of admissions was 6,478, and of deaths, including those of four invalids, was 28. The annual admission rate, 630·2 per 1,000, is higher than the corresponding rate for the previous year by 46·8, and the annual death rate, 2·72 per 1,000, is lower by 3·08 per 1,000.

In the *febrile group* the admissions were 4,675, and the deaths 18, giving the respective annual rates of 454·8 and 1·75 per 1,000; compared with the corresponding rates for the previous year the former is higher by 50·4 and the latter lower by 2·72 per 1,000.

Eruptive fevers caused 8 admissions and no death; the annual admission rate ·8 is higher than that for the previous year by ·4 per 1,000, the death rate in each year being *nil*. The cases were scarlet fever 4, measles 2, small pox 1, chicken pox 1.

Continued Fevers caused 1,069 admissions and 13 deaths; the annual admission rate 104·0 and the annual death rate 1·26 are lower than the corresponding rates for the previous year by 27·5 and ·45 per 1,000 respectively. The cases were simple continued fever 612, febricula 432, and enteric fever 25. The deaths were from enteric fever 11, and from simple continued fever 2.

Paroxysmal Fevers.—From this class the admissions amounted to 3,563, and the deaths to 3; the annual admission rate 346·6 is higher than that for the previous year by 80·8, and the annual death rate ·29 is lower by ·28 per 1,000. The cases were ague 3,404 and remittent fever 159, the deaths were from remittent fever 3.

Cholera caused one admission and one death, giving the annual admission rate of ·1 and death rate of ·10 per 1,000; the former is lower than that for the previous year by 3·3, and the latter is lower by 2·09 per 1,000.

Under *other diseases* occurred 34 admissions and one death, giving the annual admission rate of 3·3 per 1,000, which is identical with that for the previous year, and the death rate of ·10 per 1,000 in contrast with *nil* for the previous year. The cases were erysipelas 15, influenza 14, mumps 4, diphtheria 1, the death was from erysipelas.

From the *constitutional group* the admissions were 1,803, and the deaths, including those of four invalids 10, giving the annual admission rate of 175·4, and the annual death rate of ·97 per 1,000; compared with the corresponding rates for the previous year, the former is lower by 3·6 and the latter by ·36 per 1,000.

Rheumatism caused 327 admissions and no death, giving the annual admission rate of 31·8, which is higher than that for the previous year by 2·2 per 1,000; the death rate *nil* contrasts with ·09 per 1,000 for the previous year. The cases were muscular rheumatism 150, chronic 127, acute 39, and gonorrhœal 11.

Syphilis in the primary form caused 1,106 admissions and no death, and in the secondary 260 admissions and 1 death; the annual admission rate for the former, 107·6, is lower than that for the previous year by 5·7; the death rate for each year was *nil*; the annual admission rate for the latter, 25·3, is higher than that for the previous year by 1·3 per 1,000, and the death rate ·10 per

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1,000 exceeds that for the previous year by the fraction ·01 per 1,000. In consequence of the comparative frequency with which inflammation of the inguinal glands appears as a disease in some of the returns, the Principal Medical Officer suspects that even the small diminution of the primary form of syphilis above indicated may be more apparent than real. *Madras.*

Under *tubercular diseases* occurred 75 admissions and 9 deaths, including those of four invalids; the annual admission rate 7·3 exceeds that for the previous year by 1·0 per 1,000, and the death rate ·87 is lower by ·28 per 1,000. The cases were phthisis pulmonalis 60, hœmoptysis 10, scrofula 5; the deaths were all from phthisis pulmonalis.

Scurvy and Purpura.—Under this heading one case caused an annual admission rate of ·1, which is lower than that for the previous year by ·3 per 1,000; no death occurred during either year.

Other diseases caused 34 admissions, giving the annual admission rate of 3·3, which is lower than that for the previous year by 2·1 per 1,000; no death occurred during either year. The cases were anæmia 32 and general dropsy 2.

Local Diseases.—*Diseases of the Nervous System* caused 154 admissions and 16 deaths. The annual admission rate 15·0 and death rate 1·56, compared with the corresponding rates for the previous year, are lower by 5·6 and ·63 per 1,000 respectively. The cases were neuralgia 53, epilepsy and epileptic vertigo 31, sunstroke 31, mania 8, melancholia 4, dementia 2, sciatica 5, meningitis 4, encephalitis 3, paralysis 4, locomotor ataxy 3, tetanus 2, apoplexy hemiplegia, paraplegia, hydrophobia, of each 1. The deaths were from sunstroke 7, meningitis 4, tetanus 2, locomotor ataxy 1, mania 1, hydrophobia 1. The Principal Medical Officer remarks that "the deaths due to sunstroke "were only ·68 per 1,000 of the strength against 1·24 per 1,000 in 1879. Two "deaths were attributed to tetanus, one being traumatic in origin, the other "had tetanic symptoms, but the illness would seem to have probably been due "to strychnine poisoning."

Diseases of the Eye.—The admissions amounted to 165, giving the annual rate of 16·1 per 1,000, which is fractionally lower than the corresponding rate for the previous year. Conjunctivitis, "although nowhere epidemically present," caused "124 of the admissions."

Diseases of the Circulatory System.—The admissions in this class amounted to 183 and the deaths to 12, giving the annual rates of 17·8 and 1·17 per 1,000 respectively; compared with the corresponding rates for the previous year the former is lower and the latter higher by 1·17 and ·22 per 1,000. The cases were palpitation 138, valvular disease 22, varix 7, hypertrophy of heart 6, aneurism of abdominal aorta 4, of thoracic aorta 1, syncope 2, adherent pericardium, fatty degeneration of heart, rupture of artery, 1 respectively. The deaths were from valvular disease 5, fatty degeneration of heart 2, aneurism of thoracic aorta 3, of abdominal aorta 1, rupture of artery 1. The Principal Medical Officer remarks that the decrease of functional affections was satisfactory to an extent beyond its proportionate rate, palpitation having been 2·9 per 1,000 less prevalent than in 1879.

Diseases of the Absorbent System caused 318 admissions, giving the annual admission rate of 30·9 per 1,000. With reference to the remarks of the Principal Medical Officer above quoted as to the prevalence of primary syphilis, it may be here noted that of the total number of admissions 280 were from inflammation and 30 from suppuration of the inguinal glands.

Diseases of the Respiratory System caused 360 admissions and 7 deaths, including that of an invalid in England from bronchitis. The annual admission rate 35·0 is lower and the annual death rate ·68 is higher than the corresponding rate for the previous year by 1·8 and ·11 per 1,000 respectively. The cases were bronchitis 197, bronchial catarrh 101, pneumonia 35, asthma 13, pleurisy 6, laryngeal catarrh 4, chronic pulmonic phthisis 2, abscess of lung 1, emphysema 1. The deaths were from pneumonia 4, pulmonary extravasation 1, abscess of lung 1, bronchitis 1.

Diseases of the Digestive System.—From this class occurred 2,378 admissions and 29 deaths, including those of three invalids. The annual admission rate 231·3 and the annual death rate 2·82, compared with the corresponding rates for the previous year, are lower by 69·3 and 2·70 per 1,000 respectively. The Principal Medical Officer remarks that the reality and satisfactory nature of the decrease above-noted are proved by the rate of invaliding from diseases of this

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Madras. class having also been less than one-third of that of 1879, the decrease therefore "has not followed on the transfer to England of men suffering from affections "classed under this head." The principal causes of admission were dyspepsia 479, dysentery 477, diarrhœa 441, hepatitis 396, tonsillitis 164, hœmorrhoids 83, simple enlargement of liver 60, jaundice 51, splenitis 20, typhlitis 6, abscess of liver 5, ditto associated with dysentery 4, hernia 19, peritonitis 3, cirrhosis of liver 1. The deaths were from hepatitis 12, dysentery 5, abscess of liver 4—2 being those of invalids—diarrhœa 2, peritonitis 2, one being that of an invalid—typhilitis 1, perforation of intestine 1, cirrhosis of liver 1, sloughing sore throat 1. In Abstract No. XXVIII. will be found a table showing the prevalence of mortality from dysentery, diarrhœa, and hepatitis in each quarter of the year. It may be remarked that in each instance the variations in the several rates are very slight.

Diseases of the Urinary System.—Gonorrhœa caused 1,109 and its sequelæ 145 admissions, giving the respective annual rates of 107·9 and 14·1 per 1,000; compared with the corresponding rates for the previous year the former is higher by 12·5 and the latter by 1·0 per 1,000. No deaths occurred during either year. The sequelæ are enumerated as gleet 65, epididymitis 31, stricture of urethra 21, bubo 15, phimosis and paraphimosis 8, cystitis 2, urinary fistula 1, warts 1, hæmaturia 1.

Other Diseases caused 96 admissions and 1 death; the annual admission rate 9·3 exceeds that for the previous year by 1·9 per 1,000, and the death rate ·10 is lower by ·38 per 1,000. The cases are enumerated as balanitis 60, stricture of urethra 10, cystitis 8, Bright's disease 8, incontinence of urine 5, nephritis, urethritis, hæmaturia, urinary abscess, and condyloma 1 respectively. The death was from Bright's disease.

Diseases of the *Generative System* caused 147 admissions; the annual admission rate 14·3 exceeds that for the previous year by 1·6 per 1,000; no death occurred during either year. The cases were orchitis 134, hydrocele 7, varicocele 4, inflammation of penis 1, spermatorrhœa 1.

Diseases of the *Organs of Locomotion.*—Under this heading occurred 75 admissions and no death; the annual admission rate 7·3 is higher than that for the previous year by 3·2 per 1,000, and the death rate *nil* contrasts with ·09 per 1,000 for the previous year. The cases were synovitis 31, ostitis and periostitis 26, contraction of tendons 4, enlarged bursa patellæ 4, spinal curvature 2, atrophy of muscle 2, caries 1, osseous tumour 1, synovial tumour 1, loose cartilage 1, bursal abscess 1, contraction of fascia 1.

Diseases of the *Cellular Tissue.*—The admissions were 172, giving the annual admission rate of 16·7, which is lower than that for the previous year by 2·7 per 1,000; no death occurred during either year. The cases were abscess 119, inflammation 51, serous cyst 1, vascular tumour 1.

Diseases of the *Cutaneous System* caused 797 admissions, giving the annual admission rate of 77·5 per 1,000, which is less by a small fraction than the rate for the previous year; no death occurred during either year. The most frequent causes of admission were ulcer 273, boil 159, itch 64, warts 63, eczema 59, tinea tonsurans 39, herpes 29, whitlow 26, ingrown nail 11, among the less frequent were 2 cases of guinea worm.

CONDITIONS, &c.—Under the heading of *debility* occurred 371 admissions, giving the annual rate of 36·1, which is lower than the corresponding rate for the previous year by 7·8 per 1,000.

POISONS.—The admissions under this heading amounted to 28, and the deaths to 3, giving the annual rates of 2·7 and ·29 per 1,000 respectively; the former is almost identical with that for the previous year, and the latter is higher by ·10 per 1,000. The cases were delirium tremens 16, and alcoholic poisoning 12; 2 of the deaths were from delirium tremens, and 1 from alcoholic poisoning.

INJURIES.—From *general injuries* there were 2 admissions and 5 deaths, giving the respective annual rates of ·2 and ·49 per 1,000; the former is exactly half of the rate for the previous year, and the latter is lower by ·75 per 1,000. The admissions were from multiple injury 2; the deaths were from asphyxia by drowning (accidental) 2, multiple injury 2, one having occurred out of hospital, and asphyxia by hanging (*suicidal*) 1.

From *local injuries* the admissions amounted to 986 and the deaths to 7,

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giving the respective annual rates of 95·9 and ·68 per 1,000; compared with the corresponding rates for the previous year the former is lower by 10·7 per 1,000, and the latter is almost identical. The cases were contusion 417, sprain 251, wound 189, fracture 56, blisters of the feet 38, burns and scalds 12, dislocation 11, gun shot wound 5, concussion of brain 3, cut-throat 2, contusion with rupture of viscera 1, flogging 1. The deaths were from fracture of the skull 4, gun-shot wound 2, both *self-inflicted*, and rupture of spleen from a kick 1. *Madras.*

The Principal Medical Officer gives the following details: *self-inflicted injuries* and their results, *hanging* 1 case terminated fatally, *cut-throat* 2 cases recovered, *gun-shot wound* 4 cases, two died and two recovered.

Under *judicial injuries* there was 1 case of flogging.

Surgical Operations.—In one case of severe local injury from the premature discharge of a gun, amputation of the fore-arm was performed, and the case terminated favourably.

The admissions, deaths, and invaliding at each of the principal stations are shown in Abstract No. XXIII.

At Bellary the highest admission rate in the Command is shown, viz., 2752·6 per 1,000, which is 477·2 per 1,000 in excess of the rate for the previous year, "the troops there suffered excessively from paroxysmal fevers, an evil probably "irremediable due to the nature of the soil, and the situation of the canton-"ment as regards drainage facilities." The death rate, however, 13·30 per 1,000 is lower than that for the previous year by 5·06, "two-thirds of the "mortality were occasioned by accidents, the other third might fairly be "considered as suicidal in origin." In the southern district the admission rates of the several stations were below the annual average strength, and very much lower than those for the previous year; the death rate also for the district 2·97 is lower than that for the previous year by 10·24 per 1,000. At two other stations Tonghoo and Tayrangoon, both in Burmah, the admission rates were also considerably below the mean annual strength; at the former the death rate was also favourable.

At Rangoon the annual admission rate 2465·7 exceeds that for the previous year by 976·3 per 1,000, the increase being greatly due to the great prevalence of paroxysmal fevers; the death rate, however, 4·20 is lower than that for the prexious year by 9·06 per 1,000.

At Kamptee the annual admission rate 1796·1 and the annual death rate 22·08 exceed the corresponding rates for the previous year by 196·4 and 2·70 per 1,000 respectively, the first-named result being due to the prevalence of paroxysmal fevers, and the last named to the occurrence of enteric fever and sunstroke.

The relative prevalence of sickness and mortality from the different classes of diseases in each of the Administrative Circles is shown in Abstract No. XXIV., taken from the report of the Principal Medical Officer. The Principal Medical Officer remarks that in consequence of a re-arrangement of the Divisions in the Command having been made, no comparison can be instituted between the health results of the several districts for the year under report and the previous year, except for Burmah, the only Division unaffected by the changes.

General Diseases.—*Febrile group.*—The rate of admissions varies from 1174·8 per 1,000—the highest attained—in the Nagpore to 115·7 per 1,000—the lowest—in the Southern Circle. The rate of deaths in Nagpore—8·56 per 1,000—was highest, in the Hyderabad Force 3·17, in British Burmah 1·12 per 1,000, no mortality having occurred from this class of diseases in any of the other districts. As compared with the previous year, the admission rate from febrile diseases in Burmah 640·6, exceeds that for the previous year by 306·9 per 1,000, and the death rate 1·12 is lower by 8·61 per 1,000. *Constitutional group.*—The highest admission rate—356·2 per 1,000—occurred in the Mysore district, and the lowest—71·13 per 1,000—in British Burmah. Nagpore was the only district in which any mortality from this group of diseases occurred, the annual rate having been 2·44 per 1,000. As compared with the previous year the admission rate from constitutional diseases in Burmah 71·1 is lower by 7·8 per 1,000, and the death rate of *nil* contrasts with 1·44 per 1,000.

Eruptive Fevers.—Of the total number of 8 admissions from this class, 5

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Madras. occurred in the Mysore division, and 1 respectively in Hyderabad, Nagpore, and British Burmah. No death occurred.

Continued Fevers.—The admission rates varied from 163·4 in the Mysore district to 46·0 per 1,000 in the Southern Malabar district. In British Burmah the admission rate 100·5 and the death rate ·37 are lower than the corresponding rates for the previous year by 56·6 and 1·07 per 1,000 respectively. The death rates ranged from 7·34 in Nagpore to 2·37 in Hyderabad, and ·37 in British Burmah; no deaths occurred in any of the other districts. The mortality in the Nagpore district was chiefly due to *enteric fever* at Kamptee. The total number of cases of enteric fever was 25 and of deaths 11. With reference to the proportion of deaths to cases the Principal Medical Officer remarks that "it is probable that every case of the illness has not been recognised."

The stations at which the admissions and deaths from enteric fever and the quarters of the year in which they occurred are shown in Abstract No. XXV. The admissions occurred at four stations, at Secunderabad 13 cases and 6 deaths, at Kamptee 10 cases and 4 deaths, at Tayrangoon 1 case and 1 death, and at Bellary 1 case and no death; 15 cases and 7 deaths occurred in the third quarter, 6 cases and 3 deaths in the second, 2 cases and 1 death in the first, and 2 cases and no death in the fourth.

The Principal Medical Officer enters into considerable detail in connection with the history of the outbreak of enteric fever at Kamptee. Although the cause of the outbreak was not established with certainty, he considers it probable that it was due to the use of water contaminated with specific infecting matter. It was found that most of the men attacked presented the common characteristic of being teetotallers, thus in 8 cases of undoubted enteric fever, 7 of the patients were teetotallers, and in 27 cases of fever, enteric or simple continued, 20 occurred in professed teetotallers. On investigation, it turned out that the water used in the teetotallers' recreation room was taken, not from the well set apart for the supply of drinking water, but from one near the recreation room, the use of the water from which was sanctioned only for cooking purposes. The outbreak of fever ceased very soon after the shutting up of the well referred to. The well was situated close to the site of former latrines, and the surface drain from the wash-house passed within four feet of it, the casing of the shaft at the side next the drain showed water drip from percolation. There was much surface defilement by coolies and punkah pullers, many of whom were known to have suffered from diarrhœa, probably in some instances of the enteric form, and it is conceivable that the well water may in this way have been contaminated. On analysis the water was found to contain an undue proportion of organic matter, but whether of vegetable or of animal origin was not ascertained.

The Principal Medical Officer, however, admits that the evidence of the contamination is only presumptive, and that the outbreak may have been simply a fresh development of influences already in existence, cases of enteric fever having since 1877 occasionally occurred in one of the infantry barracks at Kamptee, although it may be observed that during the outbreak under report, the men attacked were from different blocks in the barracks, from different rooms in the blocks, and from no room in disproportionate numbers. Applying the numerical method of inquiry, the Principal Medical Officer observes "there were 149 teetotallers present with the head-quarters of the "corps at the time; the attacks of fever (enteric and simple continued) "amongst them were in the rate of 13·4 per cent. of their strength, or 1 "attack in every 7½ men; amongst non-teetotallers the attacks were in the "rate of 2·15 per cent. of the strength, or 1 attack in every 46 men."

The Principal Medical Officer also notes some points of clinical interest in connection with the cases of enteric fever: "in one quite typical case of enteric "fever, a perfect ague fit occurred on the thirty-fifth day of the illness, and "recurred for five days in succession, and in two other instances ague fits "occurred during the period of convalescence from enteric fever. One man "had undoubted ague two days before admission for enteric fever, and on the "morning of the second and third days after admission his temperature was "that normal for health, the same was also the case on the evening of the "fourth day, but after this the temperatures were those characteristic of the "disease; this illness was fatal, and the specific lesions of enteric fever were "found in the small intestines."

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Paroxysmal Fevers.—The highest admission rate from this class 1096·6 per 1,000 occurred in the Nagpore district, the chief prevalence having been at Kamptee. In the Mysore Division the admission rate was 334·7 per 1,000, or nearly thrice the rate for the previous year, the increase being mainly attributable to the inclusion of the station of Bellary. In British Burmah the admission rate 537·8 exceeds that for the previous year by 373·9 per 1,000, and the death rate ·37 per 1,000 is almost identical. *Madras.*

Cholera caused only 1 admission and 1 death. As shown in Abstract No. XXVI., the case occurred during the fourth quarter at Tayrangoon in British Burmah, giving for the Division the annual admission and death rate of ·37, which is lower than each corresponding rate for the previous year by 11·8 and 6·56 per 1,000 respectively.

Rheumatism.—The prevalence of this class of disease was slightly greater than for the previous year, but in British Burmah the admission rate 15·6 was lower than that for the previous year by 4·9 per 1,000.

Syphilis.—The Mysore Division presents the highest admission rate for both primary and secondary syphilis, the former having caused 234·4 and the latter 52·0 admissions per 1,000 men. In the Southern Malabar and in the Nagpore districts the admission rates for each form of syphilis are low, being for primary syphilis in the former division 72·7 and in the latter 52·6, and for the secondary form of disease 7·4 in the former and 7·3 per 1,000 in the latter division. In British Burmah the admission rate for primary syphilis was 41·7 and for secondary 8·2, the former being 2·1 higher and the latter 3·3 per 1,000 lower than the corresponding rates for the previous year.

Tubercular Diseases.—The Mysore Division furnished the highest annual admission rate from this class of disease, viz., 15·9 per 1,000. In Nagpore the rate was 11·0, and in the centre and northern district 2·5 per 1,000, and in Southern Malabar *nil*. In Nagpore the death rate was 1·22 per 1,000, and in each of the other divisions *nil*. In British Burmah the annual admission rate, 4·8, is fractionally higher than that for the previous year, while the death rate *nil* contrasts with 1·44 per 1,000 for the previous year. Among troops on the march, probably consisting chiefly of invalids, 2 deaths caused a death rate of 10·20 per 1,000, which is misleading, inasmuch as no corresponding admissions having been recorded, the deaths should more correctly have been enumerated among those of the district in which the respective diseases originated, or in which the admissions into hospital occurred.

LOCAL DISEASES.—Diseases of the *Nervous System* in the Nagpore District caused the annual admission rate of 33·0 and death rate of 4·89 per 1,000, the mortality was due to sunstroke; in the Centre and Northern District the admission rate was 21·0 and the death rate 2·47; in the Mysore Division the admission rate was 15·9 and death rate 2·45; in the Hyderabad District the admission rate was 6·3 and death rate ·79 per 1,000. In British Burmah the annual admission rate 16·7 and the annual death rate ·37 are lower than the corresponding rates for the previous year by 5·9 and 2·15 per 1,000 respectively. Among troops on the march 3 deaths caused an annual death rate of 15·31 per 1,000.

Diseases of the Eye.—The highest annual admission rate 22·2 per 1,000 occurred in the centre and northern district; in the Southern Malabar District the admission rate was *nil*. In British Burmah the admission rate 15·3 was higher than the corresponding rate for the previous year by 6·3 per 1,000.

Diseases of the Circulatory System.—The highest annual admission rate 28·7 per 1,000 occurred in the Mysore Division, the death rate being *nil*. In the Centre and Northern District the admission rate was 25·9 and the death rate 2·47 per 1,000. In the Hyderabad District the admission rate was 11·8 and the death rate 1·18 per 1,000. In the Southern Malabar District the admission rate was 7·4 and the death rate 1·48 per 1,000. In the Nagpore District the admission rate was 6·1, and the death rate 1·22 per 1,000. In British Burmah the admission rate was 20·8 and the death rate 1·12 per 1,000, compared with the corresponding rates for the previous year the former is lower by 2·3 and the latter higher by ·04 per 1,000.

Diseases of the Respiratory System.—The annual admission and death rate amounted to 38·3 and 2·47 per 1,000 respectively in the Centre and Northern District. In the Hyderabad District the admission rate was 31·2 and the death rate ·40 per 100. In British Burmah the annual admission rate was 43·5

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Madras. and death rate ·37 per 1,000, compared with the corresponding rates for the previous year the former is lower by 3·7 per 1,000 and the latter contrasts with *nil*. Among troops on the march the annual death rate was 5·10 per 1,000.

Diseases of the Digestive System.—The highest annual admission and death rate occurred in the Centre and Northern District, being 309·0 and 3·71 per 1,000 respectively. In the Nagpore District the admission rate was 173·6 and death rate 3·67 per 1,000. In the Mysore District the admission rate was 200·1 and the death rate 2·45 per 1,000. In the Southern Malabar District the admission rate was 227·0 and the death rate 1·48 per 1,000. In British Burmah the annual admission rate was 189·6 and the death rate 1·86, compared with the corresponding rates for the previous year, the former is lower by 150·2 and the latter by 3·55 per 1,000. Among troops on the march the occurrence of 3 deaths caused the annual death rate of 15·31 per 1,000. In Abstract No. XXVII. will be found a table showing the prevalence of dysentery, diarrhœa, and hepatitis in each of the divisions of the Madras Command for 1880.

Diseases of the Urinary System.—The highest annual admission rate 211·4 per 1,000 occurred in the Centre and Northern District. In the Mysore Division the admission rate was 162·2, and the occurrence of one death caused a death rate of ·61 per 1,000. In British Burmah occurred the lowest admission rate 73·7, which exceeds the corresponding rate for the previous year by 8·8 per 1,000.

Diseases of the Cutaneous System.—The highest admission rate 147·1 per 1,000 occurred in the Centre and Northern District, and the lowest 62·6 in British Burmah, being lower than the corresponding rate for the previous year by 25·7 per 1,000.

CONDITIONS, &c.—*Debility.*—The highest annual admission rate 70·0 occurred in British Burmah, and exceeds the corresponding rate for the previous year by 28·2 per 1,000. The other districts present slightly varying rates of admission.

POISONS.—The rates of admission in the several districts present only slight variations, the highest 3·6 per 1,000 having occurred in the Hyderabad District, in which also the occurrence of one death caused a death rate of ·40 per 1,000. In British Burmah the admission and death rates were almost identical with those for the previous year.

INJURIES.—The annual admission rate from *local injuries* varied from 164·4 in the Centre and Northern District, to 69·7 in the Nagpore District. In the Hyderabad and Mysore Districts the death rate amounted to 1·18 and ·61 per 1,000 respectively. In British Burmah the admission rate 82·7 and the death rate ·37 are lower than the corresponding rates for the previous year by 38·0 and 1·07 per 1,000 respectively.

The amount and annual rates of sickness, mortality, and invaliding in each corps in the Madras Command for the year 1880, taken from the report of the Principal Medical Officer, are shown in Abstract No. XXIX.

Officers.

In an average annual strength of 382 officers there were 287 attacks of illness and 5 deaths, giving the respective annual rates of 715·3 and 13·09 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 24·8 and the latter by 6·16 per 1,000. The principal cases of illness were ague 42, remittent fever 9, simple continued fever 27, febricula 22, enteric fever 1, measles 1, diarrhœa 16, dysentery 5, hepatitis 13, dyspepsia 10, boil 17, ulcer 7, contusion 19, fracture 5, sprain 5. The causes of death were enteric fever 1, simple continued fever 1, remittent fever 1, fracture of skull 1, gunshot wound, accidental, 1.

The number of officers invalided to England was 40, being at the annual rate of 104·7 per 1,000.

Women.

In an average annual strength of 962 there were, exclusive of 206 cases of child-birth, 846 admissions into hospital and 17 deaths, giving the respective annual rates of 879·4 and 17·67 per 1,000. Compared with the corresponding

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rates for the previous year the former is lower by 290·3, and the latter by ·39 per 1,000. The chief causes of admission were ague 109, simple continued fever 42, febricula 13, remittent fever 3, measles 2, influenza 2, puerperal ephemera 2, phthisis pulmonalis 9, anæmia 4, neuralgia 10, conjunctivitis 29, valvular disease of heart 6, phlegmasia dolens 2, bronchitis and bronchial catarrh 31, pneumonia 3, dyspepsia 61, dysentery 20, diarrhœa 41, hepatitis 11, menorrhagia 29, dysmenorrhæa 5, abortion 25, general debility 234. The causes of death were phthisis pulmonalis 5, valvular disease of heart 2, syncope 2, hepatitis 2, general debility 2, simple continued fever 1, cancer of uterus 1, general dropsy 1, burns and scalds 1. *Madras.*

Children.

In an average annual strength of 1,782 there were 1,423 admissions into hospital and 94 deaths, giving the respective annual rates of 798·5 and 52·75 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 80·2 and the latter lower by ·83 per 1,000. The principal causes of admission were ague 183, remittent fever 7, measles 179, chicken pox 16, small pox 1, scarlet fever 4, simple continued fever 64, febricula 21, diphtheria 2, whooping cough 19, tabes mesenterica 13, tubercular meningitis 2, scrofula 1, convulsions 27, epilepsy 2, conjunctivitis 191, tarsal ophthalmia 25, croup 10, bronchitis and bronchial catarrh 114, teething 73, dysentery 38, diarrhœa 132, boil 16, ulcer 7, general debility 141. The causes of death were convulsions 20, teething 16, diarrhœa 13, general debility 7, tabes mesenterica 6, bronchitis 6, measles 5, croup 4, remittent fever 3, scarlet fever, whooping cough and dysentery 2 respectively; simple continued fever, diphtheria, meningitis, sunstroke, laryngitis, cancrum oris, jaundice, fracture, 1 respectively.

Invaliding.

The number of non-commissioned officers and men invalided to England was 238, being at the annual rate of 23·15 per 1,000, which, compared with the corresponding rate for the previous year, is lower by 21·30, and with the average rate for the previous ten years from 1870 till 1879 by 21·87 per 1,000. The causes of invaliding were paroxysmal fevers 12, tubercular diseases 21, primary syphilis 1, secondary syphilis 9, rheumatism 5, other diseases 5, affections of the digestive system 49, circulatory 42, nervous 22, respiratory 8, organs of locomotion 6, of the eye 3, cutaneous system 3, urinary system, diseases other than gonorrhœa or its sequelæ, 2, cellular tissue 1, debility 43, local injuries 5, general injuries 1. As compared with the previous year the decrease in the rate of invaliding occurs chiefly under affections of the digestive system, debility, rheumatism, and secondary syphilis.

The number finally discharged the service was 171, of which debility, affections of the digestive and circulatory systems, tubercular diseases, and secondary syphilis were the principal causes.

Mean Daily Sick.

The average number of men constantly sick was 647·25, being at the rate 62·96 per 1,000, which is lower than the corresponding rate for the previous year by 2·23, and exceeds the average rate of constantly sick for the previous ten years from 1870 till 1879 by 5·35 per 1,000. The average sick time to each soldier was 23·04 days, which is shorter than for the previous year by ·76 of a day. The average duration of each case of sickness was 16·82 days, which by ·15 of a day is shorter than the average duration of each case during the previous year.

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III.—Bombay.

STATISTICAL REPORT.

Bombay.

In an average annual strength of 9,200 the number of admissions into hospital was 19,485, and of deaths, including those of 21 invalids which occurred either during the homeward voyage or after arrival in England, 231, being at the annual rates of 2117·9 and 25·10 per 1,000. Compared with the corresponding rates for the previous year the former is lower by 16·1 and the latter higher by 8·76 per 1,000. Compared with the average corresponding rates for the 10 years from 1870 till 1879, the former is higher by 610·9 and the latter by 8·73 per 1,000. The Principal Medical Officer considers that "the large amount of sickness and mortality during the last two years is "probably in a great measure due to the diseases contracted on field service "in Afghanistan, and their deterioratory effect on the health of the men."

The admissions and deaths in each class and order of diseases are shown in Abstract No. XXXI.

General Diseases.—The total number of admissions was 12,038, and of deaths, including those of 9 invalids, 91, giving the respective annual rates of 1308·5 and 9·89 per 1,000; compared with the corresponding rates for the previous year the former is lower by 101·4, and the latter higher by 4·74 per 1,000.

In the *febrile group* the number of admissions was 10,438, and of deaths, including that of 1 invalid, was 71. The annual admission rate, 1134·6 is lower than the corresponding rate for the previous year by 91·9 per 1,000, and the annual death rate 7·72 exceeds that for the previous year by 3·98 per 1,000.

In the *constitutional group* the number of admissions into hospital was 1,600, and of deaths, including those of 8 invalids, 20, giving the respective annual rates of 173·9 and 2·17 per 1,000; compared with the corresponding rates for the previous year, the former is lower by 9·5, and the latter higher by ·76 per 1,000.

Eruptive Fevers caused 9 admissions and 1 death, giving the respective annual rates of 1·0 and ·11 per 1,000; compared with the corresponding rates for the previous year, the former is higher by ·7, and the latter contrasts with *nil*. The cases were, small-pox 4, measles 3, chicken pox 1, scarlet fever 1. The death was from small-pox.

Continued Fevers caused 1,370 admissions and 37 deaths, giving the respective annual rates of 148·9 and 4·02 per 1,000, compared with the corresponding rates for the previous year, the former is higher by 36·8 and the latter by 2·20 per 1,000. The cases were, simple continued fever 730, febricula 587, enteric fever 53. The deaths were from enteric fever 33, and simple continued fever 4.

Of the increase of admission rate, simple continued fever contributed 33·6, enteric fever 3·0, and febricula ·2 per 1,000. Of the increase of death rate, enteric fever contributed 1·88, and simple continued fever ·32 per 1,000. No death occurred during either year under febricula.

Paroxysmal Fevers.—The admissions amounted to 8,974, and the deaths, including that of an invalid from remittent fever, to 32, giving the respective annual rates of 975·4 and 3·48 per 1,000; compared with the corresponding rates for the previous year, the former is lower by 137·1 and the latter higher by 1·86 per 1,000. Of the decrease of admission rate, 129·5 per 1,000 occurred under ague, and 7·6 under remittent fever. Of the increase of death rate, remittent fever contributed 1·52, and ague ·34 per 1,000. The cases were ague 8,571, and remittent fever 403. The deaths were, from remittent fever 27, and ague 5. One of the deaths from remittent fever occurred at Kandahar.

Under *other diseases* occurred 85 admissions and 1 death, giving the annual admission rate of 9·3, and death rate of ·11 per 1,000, The cases were influenza 64, erysipelas 20, and mumps 1. The death was from erysipelas.

Rheumatism caused 362 admissions and 3 deaths, that of one invalid being included. The annual admission rate, 39·4, and death rate, ·32 per 1,000, exceed the corresponding rates for the previous year by 2·7 and ·22 per 1,000, respectively. The cases were, chronic rheumatism 137, muscular 136, acute

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75, gonorrhœal 7, synovial 3, gout-acute 2, and chronic 2. The deaths were all from acute rheumatism. *Bombay.*

Syphilis in the primary form caused 850, and in the secondary 210 admissions. The annual admission rate for the former, 92·4, and for the latter, 22·8, are lower than the corresponding rates for the previous year by 16·7 and ·5 per 1,000 respectively. One death occurred from primary syphilis, giving the death rate of ·11 per 1,000 which contrasts with *nil* for the previous year.

Tubercular Diseases.—The admissions were 62 and the deaths, including those of 7 invalids, 14, giving the annual rates of 6·7 and 1·52 per 1,000 respectively. Compared with the corresponding rates for the previous year, the former is lower by 2·6, and the latter by ·31 per 1,000. The cases were phthisis pulmonalis 54, and hæmoptysis 8. Except in the case of one invalid, who died from acute miliary tuberculosis, the deaths are all attributed to phthisis pulmonalis.

Scurvy and Purpura caused 35 admissions and one death, giving the annual admission and death rates of 3·8 and ·11 per 1,000 respectively. The former exceeds the corresponding rate for the previous year by 3·6, and the latter contrasts with *nil*.

Other Diseases.—Under this heading the admissions amounted to 81, and 1 death occurred, giving the annual admission rate of 8·8 and death rate of ·11 per 1,000. The chief cases were anæmia 71, general dropsy 6, diabetes 1, lupus 1, medullary cancer 1. The death was from diabetes.

Local Diseases.—*Diseases of the Nervous System* caused 137 admissions and 37 deaths, including the death of an invalid. The annual admission rate, 14·9 is less by ·9 per 1,000 than the corresponding rate for the previous year, and the death rate, 4·02 is higher by 2·72 per 1,000. The cases were sunstroke 46, neuralgia 35, epilepsy 12, dementia 10, encephalitis, paralysis, convulsions, of each, 5, melancholia 4, meningitis, apoplexy, loco-moter-ataxy, of each, 3, tetanus 2, mania 2, white softening of brain 1, imbecility 1. The deaths were from sunstroke 20, apoplexy 9, meningitis 3, tetanus 2, white softening of brain 1, dementia 1, paralysis 1, the last-named having occurred in the case of an invalid.

Diseases of the Eye caused 154 admissions, being at the annual rate of 16·7, which exceeds the corresponding rate for the previous year by 2·4 per 1,000. Conjunctivitis caused 110 and tarsal opthalmia 15 of the admissions.

Diseases of the Circulatory System caused 112 admissions and 5 deaths, the death of an invalid being included. The annual admission rate, 12·2, is lower by ·5 per 1,000 than the corresponding rate for the previous year, and the annual death rate, ·54 is lower by ·37 per 1,000. The cases were, palpitation 75, valve disease of heart 15, varix 9, hypertrophy of heart 6, fatty degeneration of heart 2, aneurism of aorta 3, angina pectoris 1, arteritis 1. The deaths were, from aneurism of aorta 2, valve disease 2, including the death of an invalid, and fatty degeneration of heart 1.

Diseases of the Absorbent System caused 237 admissions, giving the annual rate of 25·8 which exceeds the corresponding rate for the previous year by 4·8 per 1,000. The cases were, inflammation of the inguinal glands 208, suppuration of the inguinal glands 22, inflammation of the cervical glands 6, and of the axillary 1.

Diseases of the Respiratory System.—Under this heading the admissions amounted to 534, and the deaths, including those of four invalids, to 21, giving the respective annual rates of 58·0 and 2·28 per 1,000. Compared with the corresponding rates for the previous year, the former is lower by 2·7 and the latter by ·25 per 1,000. The cases were bronchitis 242, bronchial catarrh 201, pneumonia 64, pleurisy 15, asthma 5, coryza 2, laryngeal catarrh 2, laryngitis, aphonia emphysema, 1 of each. The deaths were, from pneumonia 19, including 3 deaths of invalids, bronchitis 2, including the death of one invalid.

Diseases of the Digestive System caused 2,447 admissions and 47 deaths, including those of 4 invalids, giving the annual rates of 266·0 and 5·11 per 1,000 respectively. Compared with the corresponding rates for the previous year, the former is higher by 51·4, and the latter by ·88 per 1,000 respectively. The principal cases were diarrhœa 727, dysentery 412, dyspepsia 285, ton-

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Bombay.

sillitis 274, hepatitis 230, splenitis 110, hæmorrhoids 72, jaundice 69, colic 63, sore throat 33, simple enlargement of liver 26, tænia solium 24, congestion of spleen 25, abscess of liver 14, ulcerated throat 8, enteritis 2, perforation of intestine 2, acute atrophy of liver 2, peritonitis 2. The deaths were, from dysentery 26, including the death of an invalid, abscess of liver 5, hepatitis, including the death of an invalid 4, diarrhœa 2, acute atrophy of liver 2, ulcerated throat, enteritis, perforation of intestine, hæmorrhoids, splenitis, peritonitis, hydatids of liver, hernia, 1, respectively; in the two last-named cases the patients were invalids.

Diseases of the Urinary System.—Gonorrhœa caused 925 admissions, and its sequelæ 183. The annual admission rate for the former, 100·5 is lower than the corresponding rate for the previous year by 15·6, and for the latter, 19·9, is higher by 9·6 per 1,000, the total result for gonorrhœa and its sequelæ being a decrease in the annual admission rate of 6·0 per 1,000. The cases returned as sequelæ of gonorrhœa are, gleet 101, stricture of urethra 40, phimosis 13, bubo 13, epididymitis 10, paraphimosis 6.

Under "other diseases" occurred 98 admissions and 5 deaths, including those of two invalids. The annual admission rate, 10·6, and death rate, ·54, exceed the corresponding rates for the previous year by 2·7 and ·14 per 1,000 respectively. The cases were balanitis 69, Bright's disease 15, suppurative nephritis 3, cystitis 3, stricture 2, urinary abscess 2, incontinence of urine 2, irritability of bladder 1, urinary fistula 1. All the deaths were from Bright's disease.

Diseases of the Generative System caused 99 admissions and no death. The annual admission rate 10·8 is lower by ·7 per 1,000 than the corresponding rate for the previous year. The chief cases were, orchitis 84, hydrocele 2, non-malignant tumour 2, hæmatocele 1, variocele, 1.

Diseases of the Organs of Locomotion caused 35 admissions and 1 death. The annual admission rate 3·8 exceeds the corresponding rate for the previous year by 1·3 per 1,000, and the death rate ·11 by ·01 per 1,000. The cases were acute synovitis 17, ostitis 4, periostitis 4, contraction of tendon 3, enlarged bursa patillæ 2, caries 2, chronic synovitis 1, dropsy of joint 1, adhesion of tendon 1. The death was from caries.

Diseases of the Cellular Tissue caused 189 admissions and 1 death, giving the respective annual admission and death rate of 20·5 and ·11 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 3·5, and the latter contrasts with *nil*. The cases were abscess 144, inflammation 45. The death was from abscess.

Diseases of the Cutaneous System caused 690 admissions, giving the annual rate of 75·0, which exceeds the corresponding rate for the previous year by 9·9 per 1,000. The principal cases were, ulcer 216, boil 169, eczema 84, warts 55, itch 19, herpes 16, Guinea worm 3.

Conditions, &c.—*Debility* caused 467 admissions and 1 death. The annual admission rate 50·8 exceeds that for the previous year by 9·8 per 1,000, and the annual death rate ·11 is higher by ·01 per 1,000.

Poisons.—Under this heading occurred 59 admissions and 2 deaths, giving the respective annual rates of 6·4 and ·22; compared with the corresponding rates for the previous year, the former is lower by 2·9 and the latter higher by ·02 per 1,000. The cases were, alcoholic poisoning 37, delirium tremens 20, sting of scorpion 1, dog's bite 1; it may here be observed that cases of the last-named class should only be recorded under the heading of poisoned wounds when the dog actually suffers from rabies, and in the present instance such is not stated to have been the case. The two deaths were from delirium tremens.

Injuries.—Under *general injuries* occurred 8 admissions and 8 deaths, giving the respective annual rates of ·9 and ·87 per 1,000 compared with the corresponding rates for the previous year, the former is higher by ·8 and the latter by ·26 per 1,000. The cases were burns and scalds 5, multiple injury 2, asphyxia from drowning 1. The deaths were, from asphyxia by drowning 5, multiple injury 2, and exhaustion from accidental fall into a well 1.

From *local injuries* the admissions amounted to 944 and the deaths to 12, giving the respective annual rates of 102·6 and 1·30 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 9·5 and the latter by ·49 per 1,000. The cases were contusion 424, sprain 223,

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wounds 198, fracture 40, blisters of feet 31, gun-shot wounds 12, one of which was *self-inflicted* and one *homicidal*, dislocation 9, concussion of brain 3, burns and scalds 3, rupture of cerebral veins 1. The deaths were, from fracture 5, four being fractures of the skull and one of the spine, gun-shot wounds 3, one of which was *self-inflicted*, rupture of spleen 2, rupture of cerebral veins 1, killed near Sibi 1. Of the last-named case no information is given in the Reports, but from the place at which the death occurred, probably it should have been entered among casualties on field service. *Bombay.*

Four cases of injuries are returned as having been wounds received *in action*, but in the absence of any information as to the place at which the action took place it may be assumed that the cases were re-admissions of men wounded on field service.

Surgical Operations.—None were performed.

One case of *flogging* occurred in the Military Prison at Poona.

The admissions and deaths in the principal stations in the Command are given in Abstract No. XXXII., furnished by the Principal Medical Officer.

On the 1st April there was a re-distribution for British troops into Circles of medical superintendence, viz., Presidency, Mhow, Poona, and Sind. By the amalgamation of the military medical administration, which came into force on the 1st April 1880, the Presidency Circle is now under the superintendence of a Deputy Surgeon-General of the Indian Medical Department. Sind has been made a separate Circle under another Deputy Surgeon-General of that service, while the Poona and Mhow Circles remain under the Deputy Surgeons-General of the Army Medical Department.

Comparison therefore between the health statistics of the respective Medical Circles for the year under report and the previous year cannot be made with accuracy, but the several stations in the Abstract referred to, except a few of low annual strength recently introduced, may be so compared. Of stations with an average annual strength of more than 1,000, Kurrachee presents the highest admission and death rates, the former being 3380·0 and the latter 50·09 per 1,000. Compared with the corresponding rates for the previous year, the former is higher by 821·1 and the latter by 29·54 per 1,000; paroxysmal fevers and diseases of the digestive system were the chief maladies. Sick were constantly admitted on arrival from Afghanistan in a very exhausted condition, and the death rate was thereby much increased. The 98th Regiment had arrived in September in a weakly state, many of the men presenting symptoms of a scorbutic taint, supposed to have originated in Malta where they had served five years, and three years previously in the West Indies; they suffered much at Kurrachee from paroxysmal and other fevers. The depôt of the 66th Regiment had been quartered at Kurrachee during the absence of the regiment in Afghanistan. Malarious fevers of a pernicious type, diarrhœa, and dysentery prevailed among the men, who had also acquired a scorbutic taint. Intemperance also exerted an aggravating influence on the prevailing diseases. At Poona the annual admission rate 2676·1 and the annual death rate 15·06 per 1,000, are higher than the corresponding rates for the previous year by 110·5 and 8·19 per 1,000 respectively. A considerable proportion of the garrison was formed by depôts consisting of the more weakly men of regiments on field service in Afghanistan, from which also many men were sent back in bad health; the men of the 1st Battalion Rifle Brigade having suffered much from the heat experienced on the voyage through the Red Sea, arrived at Poona at an unfavourable season during the month of October; continued and malarious fevers and diarrhœa prevailed among them as also among those of the 78th Regiment before their departure for Afghanistan; venereal diseases were also very prevalent. At Mhow the annual admission rate 2493·3 and the annual death rate 14·45 per 1,000, exceed the corresponding rates for the previous year by 63·1 and 4·17 per 1,000 respectively. The prevailing diseases were paroxysmal and continued fevers, and the mortality was caused chiefly by enteric fever.

Of stations with an average annual strength exceeding 500, Bombay presents the highest annual admission and death rates, viz., 1947·2 and 37·08 per 1,000 respectively. Compared with the corresponding rates for the previous year, the former is higher by 307·5 and the latter by 20·90 per 1,000. In the absence of any unusual or exceptional local agency, the officer in medical charge of the Station Hospital for Bombay, at Colaba, considers that

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Bombay.

the increase of sickness and mortality during the year under report is accounted for by the arrival of the 61st Regiment from Malta at the most unfavourable period of the year. Simple continued and paroxysmal fevers, dysentery and diarrhœa, and venereal diseases were the chief causes of inefficiency. Dysentery and diarrhœa were the chief causes of mortality. At Nusseerabad the annual admission and death rates were 1559·1 and 19·16 per 1,000 respectively, which are lower than the corresponding rates for the previous year by 1175·5 and 17·57 per 1,000 respectively. Paroxysmal fevers, though still causing a high admission rate, were reduced to less than one half their prevalence for the previous year. Venereal diseases were more prevalent than during the previous year, although actual syphilitic disease was only slightly in excess. Of the total number of 12 deaths at the station, six were from enteric fever, one from small-pox, and one from simple continued fever. At Aden the annual admission and death rates were 1414·6 and 20·66 per 1,000 respectively, compared with the corresponding rates for the previous year the former is higher by 247·0, and the latter lower by 4·07 per 1,000. Paroxysmal fevers caused by far the greatest number of admissions and occurred principally among the men of the 1st Battalion 6th Regiment, which had arrived from Bengal during the previous year in most weakly condition, particularly the wing which had been stationed at Delhi, and it was among the men of this wing that paroxysmal fevers and affections of the respiratory and digestive systems were most frequent during the year under report, of the last-named class of disease dyspepsia from intemperance furnished a large proportion, several cases were also returned under "alcoholic poisoning." The general health of the regiment had, however, very materially improved. At Belgaum the annual admission rate, 1189·2, and the annual death rate, 6·95 per 1,000, were lower than the corresponding rates for the previous year by 154·0 and 3·40 per 1,000 respectively. Of the stations with an average annual strength below 500, and above 100, Baroda presents the highest admission rate, 3873·7, which exceeds that for the previous year by 616·7 per 1,000, the death rate also was high, 20·20, exceeding the corresponding rate for the previous year by 14·61 per 1,000. The garrison throughout the year was composed of detachments for short and varying periods from the I and N Batteries, 1st Brigade, and A Battery, 2nd Brigade, Royal Artillery, the 24th Regiment, 2/15th Regiment, 29th Regiment, 61st Regiment, and 78th Highlanders. Paroxysmal fevers and venereal diseases were the chief causes of inefficiency. At Ahmedmuggur the annual admission rate, 3180·9, and annual death, 42·85, exceed the corresponding rates for the previous year by 1094·9 and 39·27 per 1,000 respectively. These high rates were caused chiefly by paroxysmal fevers, affections of the digestive system, venereal diseases, and the results of intemperance among the men of the depôts of the 2nd Battalions of the 7th and 11th Regiments, from the head-quarters of which, on field service, many men in very bad health arrived from time to time. At Neemuch the annual admission rate, 3225·6, and death rate, 12·82, are lower than the corresponding rates for the previous year by 1108·6 and 4·51 per 1,000 respectively. Although a considerable reduction in the admission rate is apparent, fevers of malarious origin caused a large amount of inefficiency. At Ahmedabad the annual admission rate 2634·7, and the annual death rate 17·96, are lower than those for the previous year by 205·5 and 2·66 per 1,000 respectively. A Battery, 2nd Brigade, Royal Artillery, was at the station throughout the year with detachments for varying periods from the 2nd Battalions of the 4th, 15th, and 61st Regiments. The prevailing diseases were paroxysmal fevers. At Kirkee the annual admission rate, 1997·8, and the annual death rate, 10·91, are lower than the corresponding rates for the previous year by 215·7 and 3·46 per 1,000 respectively. The garrison during the year, at varying periods was composed of E Battery, B Brigade, Royal Horse Artillery, I Battery, 1st Brigade, and D and F Batteries, 2nd Brigade, Royal Artillery, with detachments from the 2nd Battalion 4th Regiment, 78th Highlanders, and 1st Battalion Rifle Brigade. The health of the Artillery was good generally, but continued and paroxysmal fevers, affections of the digestive system, and venereal diseases prevailed among the infantry detachments. At Hyderabad the annual admission rate, 1865·8, and the annual death rate, 21·34, exceed the corresponding rates for the previous year by 52·8 and 13·71 per 1,000 respectively. The garrison during varying periods consisted of the C and F

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Batteries, 2nd Brigade, Royal Artillery, N Battery 1st Brigade, and a wing of the 2nd Battalion 11th Regiment. At Deesa the annual admission rate, 1818·5, exceeds that for the previous year by 847·4, while the annual death rate, 12·30, is lower than that for the previous year by 8·43 per 1,000. Paroxysmal fevers were the most frequent causes of admission, and much more prevalent than during the previous year. *Bombay.*

The admissions and deaths in the various classes and orders of diseases in each of the military divisions of the Bombay Command are shown in Abstract No. XXXIII., furnished by the Principal Medical Officer.

For the reasons above stated no comparison of the several divisions with reference to the prevalence of the various classes of disease during the year under report and the previous year can be instituted. In consequence also of this Abstract having been compiled from the monthly and quarterly returns, the total numbers for each division will not be found to be exactly identical with those given in Abstract No. XXXI., which, being compiled from the revised and amended annual returns, more nearly approach accuracy.

General Diseases.—The Sind Division presents the highest annual admission and death rates, viz., in the *febrile group* 1844·4 and 17·29, and in the *constitutional group* 244·9 and 1·44 per 1,000 respectively, the total rates being 2089·3 and 18·73 per 1,000. In the Mhow Division the *febrile group* gave an annual admission rate of 1403·4, and death rate of 7·25, and the *constitutional group* 155·5 and 1·65 per 1,000, the total rates being 1558·9 and 8·90 per 1,000 respectively. In the Poona Division the *febrile group* gave an annual admission rate of 1243·2, and death rate of 7·27, and the *constitutional group* of 209·3 and ·97, the totals being 1452·5 and 8·24 per 1,000 respectively. In the Presidency Division the *febrile group* caused an annual admission rate of 619·5, and death rate of 3·16, and the *constitutional group* of 169·4 and ·90 per 1,000, the totals being 788·9 and 4·06 per 1,000 respectively.

Eruptive Fevers.—Small-pox caused three admissions, viz., two in the 17th Lancers at Mhow, and one in the 2nd Battalion 17th Regiment at Nussurabad, the latter terminated fatally. Three cases of measles occurred in the 78th Regiment at Poona. One case of scarlet fever in the 2/17th Regiment at Nussurabad, and one of chicken-pox in the 1/16th Regiment at Aden.

Continued Fevers.—The highest admission and death rate from this class of fevers, the former 242·1, and the latter 7·20 per 1,000 occurred in the Sind Division, nine out of the total number of ten deaths having been caused by enteric fever. In the Poona Division the annual admission and death rates were 213·7 and 4·36 per 1,000 respectively, the nine deaths were all from enteric fever. In the Presidency Division the admission rate was 145·5, and the death rate ·90 per 1,000, no death was caused by enteric fever. In the Mhow Division the admission rate was 133·4, and the death rate 5·27 per 1,000, 15 out of a total number of 16 deaths were from enteric fever.

Enteric Fever.—Abstract No. XXXIV., taken from the report of the Principal Medical Officer, shows the stations in the Bombay Command at which the admissions and deaths from enteric fever occurred in each of the four quarters of the year. Of the total number of 53 admissions and 33 deaths, 26 admissions and 18 deaths occurred in the fourth quarter, 15 admissions and 7 deaths in the second, 7 admissions and 7 deaths in the third, and 5 admissions and 1 death in the first quarter. The Principal Medical Officer remarks that "from all the information collected suspicion is attached to the "drinking water, and the careful investigation made by a special committee "at Mhow points in the same direction, though no case could be directly "traced to it." "Climatic influences acting on young soldiers recently "arrived in India," were included among the causes, and the Mhow Committee found that there was "no connexion between the fever and the milk supply." At Kirkee a committee gave an opinion of very much the same nature, 27 of the cases and 19 of the deaths occurred in men under 24 years of age, 25 cases and 14 deaths above 24 years of age, in one case the particulars were not attainable. The ratios per 1,000 men, aged from 26 to 28 years, were for cases 10·1, and for deaths 5·04; from 22 years and under, 9·6 and 6·81; from 23 to 24, 5·4 and 4·21; from 24 to 26, 7·0 and 5·61; from 28 to 30, 1·11; and from 30 to 35 and upwards, 1·56 for cases, no deaths

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having occurred among men of the two last-named ages. Forty-four of the cases and twenty-nine of the deaths occurred among men of two years' service and under in India, eight of the cases and four of the deaths among those above two years' service in India, in one case the particulars were not attainable.

The per-centage of enteric fever deaths to all deaths from disease was for men aged 22 years and under 6·28, from 23 to 24 years 3·66, from 24 to 26 years 4·18, from 26 to 28 years 3·14.

Paroxysmal Fevers.—The proportional prevalence of this class of fevers at the several stations in the Command, during the year under report and the previous year, is shown in the following table taken from the Report of the Principal Medical Officer :—

Stations.	Ratio of Admissions per 1,000 of the Strength.		Stations.	Ratio of Admissions per 1,000 of the Strength.	
	1880.	1879.		1880.	1879.
Baroda - -	2262·6	2078·2	Poona - -	1037·6	1202·3
Neemuch - -	1817·9	3207·8	Hyderabad - -	932·9	1201·0
Kurrachee, including			Kirkee - -	899·5	1248·5
Ghizree - -	1784·3	1664·4	Poorundhur -	693·8	1253·9
Indore - -	1715·9	1532·5	Deolali - -	641·7	1281·0
Asseergurh - -	1686·4	1475·7	Aden - -	528·9	83·6
Mhow - -	1371·8	1451·6	Bombay - -	506·3	601·8
Taraghur - -	1363·6	1973·7	Sukkur - -	500·0	—
Mount Abu - -	1318·8	1437·5	Sattara - -	489·9	1479·7
Admednugger -	1271·4	1207·8	Nusseerabad -	447·2	1327·2
Deesa - -	1135·3	334·9	Belgaum - -	368·5	578·7
Khandalla - -	1113·6	631·6	Teethul - -	125·0	—
Ahmedabad - -	1053·8	984·5			
			On the March -	248·1	179·4

The highest admission and death rate occurred in the Sind Division, namely, 1600·1 admissions and 10·09 deaths per 1,000. Kurrachee supplied by far the largest proportion of cases, the admission rate having been 1784·3 which exceeds the corresponding rate for the previous year by 119·9 per 1,000. At Hyderabad the annual admission rate 932·9 is lower than that for the previous year by 268·1 per 1,000. In the Mhow division the annual admission rate was 1266·6 and the death rate 1·65 per 1,000. At Deesa the annual admission rate, 1135·3, exceeds that for the previous year by 800·4 per 1,000. Baroda furnished the admission rate of 2262·6 which exceeds that for the previous year by 184·4 per 1,000. At Indore the admission rate of 1715·9 exceeds that for the previous year by 183·4. At Ahmedabad the admission rate 1053·8 is higher by 69·3 per 1,000. At Neemuch the admission rate was 1817·9, which is lower than that for the previous year by 1389·9 per 1,000. At Nusseerabad the admission rate of 447·2, and at Mhow of 1371·8, are lower than the corresponding rates for the previous year by 880·0 and 79·8 per 1,000 respectively. In the Poona Division the annual admission rate was 988·9 and death rate 2·91 per 1,000. The admission rate at Poona, 1037·6, is lower than that for the previous year by 164·7 per 1,000. At Kirkee the admission rate, 899·5, is lower than that for the previous year by 349·0 per 1,000. At Ahmednuggur the admission rate, 1271·4, shows an increase over that for the previous year by 63·6 per 1,000. In the Presidency Division the annual admission rate was 472·2 and death rate 2·26 per 1,000. At Bombay the annual admission rate, 506·3, is lower than that for the previous year by 95·5 per 1,000. At Belgaum the annual admission rate, 368·5, is lower by 210·2 per 1,000. At Aden the annual admission rate, 528·9, shows an increase of 445·3 per 1,000 over the corresponding rate for the previous year.

Cholera.—No case of or death from cholera, except one in an officer noticed elsewhere, occurred among British troops in the Bombay Command during the year 1880.

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Syphilis.—The following particulars as to the comparative prevalence of primary syphilis at some of the principal stations are derived from a table furnished by the Principal Medical Officer. The highest annual admission rate 119·2 per 1,000 occurred in the Poona Division. At the station of Poona the admission rate, 102·9, is lower than that for the previous year by 68·9 per 1,000. The admission rates of 85·1 at Kirkee, and 147·6 at Ahmednuggur, are lower than the corresponding rates for the previous year by 19·6 and 17·3 per 1,000 respectively. In the Sind Division the admission rate was 109·5 per 1,000. At Kurrachee the admission rate 103·2 is higher than that for the previous year by 65·8 per 1,000. At Hyderabad the admission rate of 125·0 shows an increase of 10·5 per 1,000. In the Presidency Division the annual admission rate was 91·3 per 1,000. At Bombay and Belgaum the annual admission rates of 142·4 and 75·1 are lower than the corresponding rates for the previous year by 34·8 and 6·6 per 1,000 respectively. At Aden the annual admission rate, 60·6, shows an increase of 33·2 per 1,000. In the Mhow Division the annual admission rate was 87·6 per 1,000. At Mhow station the annual admission rate, 113·6, exceeds that for the previous year by 68·6 per 1,000. At Neemuch the annual rate, 61·5, is higher by 16·9 per 1,000. At Indore with a Lock hospital the annual rate, 250·0, exceeds that for the previous year by 185·1 per 1,000. At Sattara, without a Lock hospital, the annual rate 328·8 per 1,000, is lower than that for the previous year by 238·8 per 1,000. These two last-named stations were garrisoned by detachments of various corps for short and varying periods, and the exceptionally high rates are not noticed in the regimental returns. At Nusseerabad the annual rate 97·6 is lower than that for the previous year by 61·0 per 1,000. At Deesa the annual rate was only 18·4, being lower than that for the previous year by 98·2 per 1,000; the medical officer in charge of N. Battery, 1st Brigade, Royal Artillery, which was at the station for nine months of the year, and in which only four cases of primary syphilis occurred, remarks that "the "paucity of admissions from primary venereal disease appears exceptional "and worthy of note," but he offers no explanation on the point. *Bombay.*

The following table, showing the comparative prevalence of primary syphilis during the years 1879 and 1880, is abridged from a table furnished by the Principal Medical Officer. The stations at which Lock hospitals exist are marked L. H. The average strength and the number of cases at each station have not been recorded.

PRIMARY SYPHILIS.

Stations.	Annual Admission Rate per 1,000 of Strength.		Stations.	Annual Admission Rate per 1,000 of Strength.	
	1880.	1879.		1880.	1879.
Bombay, L. H. -	142·4	177·2	Baroda - -	75·7	156·4
Deolali, L. H. -	208·9	163·4	Mount Aboo -	28·9	72·9
Belgaum, L. H. -	75·1	81·7	Deesa, L. H. -	18·4	111·6
Aden, L. H. -	60·6	27·4	Mhow, L. H. -	113·6	45·4
Kurrachee, L. H. -	103·2	37·4	Nusseerabad, L. H.	97·6	158·6
Hyderabad, L.H. -	125·0	114·5	Neemuch, L. H. -	61·5	44·6
Poona, L. H. -	102·9	171·8	Asseergurh -	8·4	9·7
Ahmednuggur, L. H.	147·6	164·9	Indore, L. H. -	250·0	64·9
Kirkee - -	85·1	104·7	Taragurh - -	60·6	26·3
Sattara - -	328·8	567·6			
Khandalla - -	45·4	157·9	On the march -	70·3	126·8
Poorundur - -	20·4	87·3			
Ahmedabad, L. H. -	89·8	61·9	In the Command generally.	92·4	109·1

The Principal Medical Officer observes, that "the Contagious Diseases Act "was brought into force at Bombay on 1st September. During the first four

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" months of the year there were amongst the European troops at this station " 3·1 per cent. to strength of admissions for venereal disease, whilst for " the four succeeding months the ratio was only 2·5, and for the four " months during which the Act was in operation it was only 1·8." In the 1/6th Regiment at Aden, where there is a Lock hospital, " since last May there " has not been a single case of primary disease." At Mhow, where also there is a Lock hospital, " the constitutional affections have almost disappeared. " Of the 51 cases only three have been followed by secondary symptoms," or more accurately, only two men were so affected, one having been re-admitted.

Tubercular Diseases.—The Sind Division presents an annual admission rate of 7·9 and death rate of 1·44 per 1,000; in the Poona division the admission rate is 8·7, and the death rate ·48 per 1,000; in the Presidency Division the admission rate is 6·8, and the death rate ·90 per 1,000, and in the Mhow Division the admission rate is 4·9 and death rate ·66 per 1,000.

Scurvy and Purpura—The highest annual admission rate 15·1 per 1,000 occurred in the Sind Division. The prevalence of this class of disease among the men of the 66th and 98th regiments at Kurrachee has been already noticed among the general remarks on the sickness and mortality at that station, a similar condition existed among the men of the 61st Regiment at the same station, and continued among them at Mhow but to a less degree. The meat is reported as having been generally poor and ill fed, and an extra allowance of green vegetables was issued. In no other division did the admission rate attain higher than fractional proportions. In the Mhow Division one death from *purpura hæmorrhagica* caused an annual death rate of ·33 per 1,000. The case occurred in E Battery, 2nd Brigade, Royal Artillery, at Nusseerabad, the patient had suffered much from malarial fever. On *post mortem* examination the liver was found much enlarged and the spleen 49 ounces in weight.

Local Diseases.—*Diseases of the Nervous System* caused the highest admission and death rate in the Sind Division, the former having been 20·1 and the latter 5·76 per 1,000. At Kurrachee the annual admission rate under sunstroke and apoplexy was 14·7 and the death rate 4·6 per 1,000. At Hyderabad the admission rate was 12·1 and the death rate 6·00 per 1,000. In the Presidency Division the annual admission rate under diseases of the nervous system was 15·8 and the death rate 3·16 per 1,000. At Deolali sunstroke and apoplexy caused the annual admission rate of 14·9 and death rate of 7·4 per 1,000. The nature of the troops passing through this station, namely, new arrivals from England, and invalids, and generally worn out men proceeding towards Bombay for embarkation to England, accounts to a great degree for the prevalence of this class of disease among them. At Bombay the admission rate from sunstroke and apoplexy was 7·0 and the death rate 2·8 per 1,000. At Aden these diseases caused the admission rate of 4·1 and death rate of 2·7 per 1,000. In the Mhow Division the annual admission rate and death rate from diseases of the nervous system were 14·5 and 2·31 per 1,000 respectively. At Indore one fatal case of sunstroke and apoplexy caused the annual admission and death rate of 11·3 per 1,000. At Baroda these diseases caused the admission rate of 10·1 and death rate of 5·0 per 1,000. At Deesa one fatal case caused the admission and death rate of 3·0 per 1,000. At Nusseerabad the admission rate was 11·2 and at Ahmedabad 11·9 per 1,000, but no death occurred at either station. At Neemuch the admission rate was 7·6 and death rate 2·5 per 1,000. At Mhow the admission rate was ·9 per 1,000, and no death occurred. In the Poona Division the annual admission rate from diseases of the nervous system was 10·2 and the death rate ·97 per 1,000. At Poona one fatal case of sunstroke caused the admission and death rate of ·8 per 1,000. The admission and death rates from sunstroke and apoplexy above given are extracted from a table furnished by the Principal Medical Officer.

Diseases of the Circulatory System.—The highest annual admission rate, 14·5 per 1,000, occurred in the Poona Division, and the highest annual death rate 1·44 per 1,000 occurred in the Sind Division. In the Poona Division the death rate was ·48, and in the Mhow Division ·33 per 1,000. No death occurred in the Presidency Division.

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Diseases of the Respiratory System.—The Sind Division furnished the highest admission and death rates, namely, 84·3 and 5·76 per 1,000, respectively. In the Mhow Division the admission rate was 66·9 and the death rate 1·65 per 1,000. In the Poona Division the admissions amounted to the rate of 48·9 per 1,000, and no death occurred. In the Presidency Division the admission rate was 46·6 and the death rate 1·81 per 1,000. *Bombay.*

Diseases of the Digestive System caused in the Sind Division the annual admission rate of 382·6 and death rate of 9·37 per 1,000. In the Presidency Division the admission rate was 202·4 and death rate 7·68 per 1,000. In the Poona Division the admission rate 340·6 and death rate 4·85 per 1,000. The admission rate in the Mhow Division was 256·4 and the death rate ·99 per 1,000.

Abstracts Nos. XXXVI. and XXXVII. taken from the Report of the Principal Medical Officer show the comparative prevalence of dysentery, diarrhœa, hepatitis, and abscess of the liver, in the several circles of the Bombay Command, also during each quarter of the year. The highest combined admission and death rates, 276·3 and 8·48 per 1,000, respectively, occurred in the Sind Division, diarrhœa having been the chief cause of admission, and dysentery the only cause of death. In the Presidency Division the combined admission and death rates were 105·8 and 5·68 per 1,000 respectively. Diarrhœa was the chief cause of admission, the death rate from dysentery was 3·93, from hepatitis and abscess of liver 1·31, and from diarrhœa ·44 per 1,000. In the Poona Circle the combined admission rate was 177·8, the death rates from dysentery and from hepatitis and abscess of liver were identical, namely, 1·86 per 1,000, and from diarrhœa the death rate was ·46. In the Mhow Division the combined admission rate was 110·4, of which diarrhœa caused two thirds, and the death rate, ·33 per 1,000, was caused entirely by hepatitis and abscess of liver. The admission and death rates from each of these diseases were much higher during the second than during the first half of the year, also during the fourth than during the third quarter, the death rate of the second quarter also exceeds that of the third, while in the first quarter no death occurred.

Diseases of the Urinary System.—In the Mhow Division gonorrhœa caused the annual admission rate of 125·3, and its sequelæ 31·6 per 1,000. In the Poona Division the annual admission rate for gonorrhœa was 122·1, and for sequelæ 31·5 per 1,000. The corresponding rates in the Presidency Division were respectively 111·6 and 11·3, and in the Sind Division 58·4 and 7·2 per 1,000. From a table given by the Principal Medical Officer, the annual admission rate for "gonorrhœal diseases," including probably gonorrhœa and its sequelæ, varied from 271·4 at Ahmednuggur to 25·4 at Asseergurh. It was at Bombay 129·7, Belgaum 179·4, Aden 38·5, Kurrachee 56·2, Hyderabad 94·5, Poona 139·7, Ahmednuggur 271·4, Kirkee 161·5, Ahmedabad 161·6, Baroda 95·9, Mhow 181·1, Nusseerabad 175·7, Neemuch 166·6, Asseergurh 25·4, Indore 238·6. Information as to the existence or otherwise of Lock Hospitals at the stations above noted may be found in the table under the heading of syphilis.

Diseases of the Cutaneous System.—The annual admission rates ranged from 113·4 in the Poona to 67·2 per 1,000 in the Mhow Division.

CONDITIONS.—*Debility.*—The annual admission rates ranged from 68·6 in the Mhow to 32·5 per 1,000 in the Presidency Division.

POISONS.—The highest annual admission rate 13·6 per 1,000 occurred in the Presidency Division, and the lowest 4·6 per 1,000 in the Mhow Division.

INJURIES.—From *general injuries* the several annual death rates per 1,000 were as follows, Presidency Division 2·26, Poona Division ·48, Mhow Division ·33, Sind Division *nil*. Most of the deaths occurred out of hospital.

Local Injuries caused the annual admission rates of 142·9 in the Poona Division, 108·8 in the Mhow Division, 101·6 in the Sind Division, and 94·0 per 1,000 in the Presidency Division. The annual death rates were in the Sind Division 1·44, in the Presidency 1·36, in the Mhow ·99, and in the Poona Division ·48 per 1,000.

In Abstract No. XXXVIII. are shown the admissions, mortality, and invaliding in each corps serving in the Bombay Command. In the cavalry the annual admission rate, 1571·1, is lower than that for the previous year by 67 per 1,000, the death rate 1354 is lower by ·35 per 1,000, and the in-

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Bombay.

validing rate, 45·14, is higher by 28·47 per 1,000. In the artillery the annual admission rate, 1702·5, is lower than that for the previous year by 487·0 per 1000, the death rate, 21·60, is higher by 5·02 per 1,000, and the invaliding rate, 38·75, is lower by 36·14 per 1,000. In the infantry the annual admission rate, 2308·7, exceeds that for the previous year by 152·2 per 1,000, the death rate, 23·88, is higher by 8·06 per 1,000, and the invaliding rate, 58·23, is lower by 1·49 per 1,000.

In the table given in Abstract above referred to certain abnormally high rates will be observed, but having occurred in connexion with low average annual strengths in each instance, they are clearly exceptional. Abnormally low admission rates, particularly in connexion with abnormally high death rates, may, in like manner, be accounted for.

In Abstract No. XXXIX. is given a table, taken from the report of the Principal Medical Officer, showing the comparative mortality and invaliding in the three grades of commissioned officers, non-commissioned officers, and privates for the year under report, and for the 10 previous years. The death rate of commissioned officers 10·92 is lower than the average for the 10 years by 1·33 per 1,000; the death rate of non-commissioned officers, 32·83, exceeds the average for the 10 years by 16·19 per 1,000, being very nearly double; the death rate of privates, 21·20, exceeds the average for the 10 years by 6·64 per 1,000. The invaliding rate for commissioned officers, 57·37, is lower than the average for the 10 years by 30·86 per 1,000; for non-commissioned officers, 39·87, is lower by 5·09 per 1,000; and for privates, 53·90, is higher by 10·20 per 1,000.

Officers.

In an average annual strength of 366 the cases of sickness amounted to 216, and the deaths, including 1 in England or beyond sea, 4, the number invalided to England was 21. The annual rates per 1,000 on these numbers are 590, which is lower by 198 than the corresponding rate for the previous year, 10·92, which shows an increase of 2·45, and 57·37, which is fractionally higher. The principal cases were ague 43, remittent fever 14, simple continued fever 13, febricula 9, scarlet fever 1, enteric fever 1, malignant cholera 1, diarrhœa 13, dysentery 5, hepatitis 9, simple enlargement of liver 5, dyspepsia 9, general debility 5, local injuries 20. The deaths all occurred from remittent fever. The case of cholera occurred in the 15th Battery, 9th Brigade, Royal Artillery, which on transfer from Meean Meer was stationed at Deolali for two, and at Karachi for nine months. The case has not been referred to either by the Principal Medical Officer or by the medical officer in charge of the battery. The diseases for which leave to proceed to England on medical certificate was obtained were the following:—Hepatitis 5, general debility 4, ague 2, dysentery 2, simple continued fever, cholera, secondary syphilis, diarrhœa, simple enlargement of the liver, ostitis, fracture, unknown, of each 1.

Women.

In an average annual strength of 716, the number of admissions into hospital, including 170 cases of child-birth, was 804, and the number of deaths 14, giving the respective annual rates of 11·23 and 19·55 per 1,000. Excluding the cases of child-birth, as was done in the report for the previous year, the admission rate 885 is less than that for the previous year by 262 per 1,000, and the death rate is lower by 6·80 per 1,000. The principal cases were, ague 202, remittent fever 19, simple continued fever 15, febricula 10, small-pox 2, scarlet fever 1, phthisis pulmonalis 4, anæmia 4, conjunctivitis 20, catarrhal ophthalmia 2, bronchitis and bronchial catarrh 13, pneumonia 2, diarrhœa 43, dysentery 14, tænia solium 3, typhlitis 1, abortion 10, premature labour 5, hæmorrhage 1, general debility 135. The causes of death were simple continued fever 3, ague 1, remittent fever 2, bronchitis 1, pneumonia 1, typhlitis 1, diarrhœa 2, premature labour 1, hæmorrhage 1, child-birth 1.

Children.

In an average annual strength of 1,325, the number of admissions into hospital was 870, and of deaths 67, giving the respective annual rates of 657

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and 50·56; compared with the corresponding rates for the previous year, the former is lower by 144 and the latter by 16·62 per 1,000. The principal cases were, ague 192, remittent fever 19, simple continued fever 44, febricula 13, measles 17, chicken-pox 3, small-pox 1, anæmia 9, tabes mesenterica 8, convulsions 16, conjunctivitis 111, catarrhal ophthalmia 13, bronchitis and bronchial catarrh 53, pneumonia 2, croup 2, laryngitis 1, teething 50, gastritis 1, dysentery 16, diarrhœa 79, tænia solium 7, ascaris lumbricoides 2, abscess 13, boil 13, scabies 3, premature birth 5, general debility 120. The causes of death were simple continued fever 1, ague 1, remittent fever 3, tabes mesenterica 2, convulsions 13, laryngitis 1, bronchial catarrh 1, bronchitis 1, pneumonia 2, teething 8, gastritis 1, diarrhœa 11, scabies 2 (?), premature birth 3, general debility 16, asphyxia by drowning 1. *Bombay.*

Invaliding.

The number of non-commissioned officers and men invalided to England was 478, and the number finally discharged the service was 203, giving the respective anuual rates of 51·96 and 22·06 per 1,000. Compared with the corresponding rates for the previous year, the former is lower by 8·23 and the latter higher by 1·37 per 1,000. Compared with the average for tho previous 10 years, the former is higher by 8·19 and the latter by 7·63 per 1,000. The causes of invaliding were, paroxysmal fevers 165, rheumatism 17, secondary syphilis 10, tubercular diseases 15, other diseases 6, diseases of the nervous system 17, eye 3, ear 3, circulatory 17, respiratory 10, digestive 47, sequelæ of gonorrhæa 2, other diseases of urinary system 1, generative system 2, organs of locomotion 2, cutaneous 1, debility 154, local injuries 6.

Mean Daily Sick.

The average number constantly sick was 593·66, giving the rate of 69·38 per 1,000, which is lower than the corresponding rate for the previous year by 6·17, and higher than the average for the previous 10 years by 13·79 per 1,000. The average sick time to each soldier, 20·29 days, is less than that for the previous year by 7·64 days. The average duration of each case of sickness, 13·46, is longer than that for the previous year by ·37 of a day.

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ON THE HEALTH OF THE TROOPS ON BOARD SHIP.

STATISTICAL REPORT.

Troops on Board Ship.

The troops embarked during the year, as shown in the returns received in the Army Medical Department, were:—

I. Corps, and drafts for corps, proceeding on service abroad -	17,239
II. Corps returning from abroad - - - -	10,406
III. Corps or detachments, passing by sea from one Command to another - - - - - - - -	7,046
IV. Invalids returning to England - - - -	4,026

1.—Troops Proceeding on Foreign Service.

The total number of non-commissioned officers and men embarked for foreign service during the year was 17,239, the equivalent average annual strength being 1,273. The admissions into hospital amounted to 1,115 and the deaths to 4, giving the respective annual rates of 875·9 and 3·14 per 1,000. Compared with the corresponding rates for the previous year, the former is higher by 115·9 and the latter lower by 1·16 per 1,000. The admission rate exceeds the average for the previous 10 years by 353·4 per 1,000, and the death rate is lower by 1·43.

The classes and orders of diseases by which the admissions and deaths were caused are shown in Abstract, No. XL.

General Diseases.—The total number of admissions was 269, and of deaths 2, giving respectively the rates of 211·3 and 1·57 per 1,000, which exceed the corresponding rates for the previous year by 24·7 and 1·14 per 1,000 respectively.

In the *febrile group*, there were 55 admissions, giving the annual rate of 43·2 per 1,000, which is higher than that for the previous year by 16·1; no death occurred during either year. Scarlet fever caused 4 admissions, of which 3 occurred in H.M.S. "Jumna" on the voyage from Portsmouth to Bombay between 19th December 1880 and 19th January 1881; the first on the sixth day after sailing, and the patient was left at Malta, another man, presenting febrile symptoms with sore throat and suspicious rash, was also transferred to hospital at Malta, but the case was not recorded as scarlet fever. On the day before arrival at Suez, a child was attacked, and the family was transferred to hospital at that port. On the 8th and 10th January two men were attacked, and were sent ashore at Aden on 11th January. The fourth case occurred in S.S. "Anglian" on the voyage from Southampton to South Africa between 27th November and 26th December, the symptoms became developed two days after sailing.

Measles caused 10 admissions, all on board H.M.S. "Euphrates" from Portsmouth to Bombay between 7th December 1880 and 3rd January 1881. The first case occurred two days after leaving Portsmouth; six days later a child was attacked, and both patients were landed at Malta on 16th December; no further cases occurred until the 22nd, when 3 men and a trumpeter were attacked; from that date the disease spread, and during the voyage 10 men, 1 woman, and 10 children were attacked, and 2 children died. One case of chicken pox occurred on the 8th January among the men on board H.M.S. "Malabar" proceeding from Portsmouth to Bombay between 14th December 1880 and 12th January 1881; the child of an officer and 16 children of the families on board were attacked about the same time. One man suffered from enteric fever on board H.M.S. "Jumna" on the voyage from Portsmouth to Bombay between 21st August and 19th September, the disease probably contracted before embarkation did not become fully developed till the 12th September, and severe intestinal hæmorrhage occurred on the 15th. Febricula caused 27 admissions, of which 10 occurred on board H.M.S. "Malabar" on the voyage from Portsmouth to Bombay between 16th August and 12th September, and 6 on board H.M.S. "Jumna" on the same voyage between 21st August and 19th September. Two cases of ague occurred among the men in the troopship "Assistance" from Portsmouth to Gibraltar between 8th and 18th

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October, and one case on board H.M.S. "Tyne" between 2nd July and 9th September. Under the heading "other diseases" are recorded 7 cases of erysipelas, of which two occurred in H.M.S. "Crocodile" on the voyage to Bombay between 2nd January and 3rd February, in men with slight wounds, one on 25th and the other on 28th January; a previous case among the ship's company was still under treatment at the time; one case in H.M.S. "Himalaya" from Portsmouth to Bombay between 14th August and 10th September is not specially noticed; one case in H.M.S. "Jumna" from Portsmouth to Bombay between 10th March and 10th April, the disease affecting the face and head; two cases in the "Serapis" from Portsmouth to Bombay between 7th January and 8th February are not specially mentioned, and one case in the same ship, on the same voyage between 2nd October and 6th November, was a slight attack in the head and face. *Troops on Board Ship.*

In the *Constitutional Group*, the admissions were 214 and the deaths 2, giving the respective annual rates of 168·1 and 1·57 per 1,000, which exceed the corresponding rates for 1879 by 8·6 and 1·14 per 1,000 respectively. The increase in admission rate arose almost entirely from syphilis, which in the primary form caused 146, and in the secondary 27 admissions, giving the respective annual rates of 114·7 and 21·2 per 1,000; the former so much exceeds the usual admission rates for this class of disease in the United Kingdom, as to suggest—even allowing for the first appearance of symptoms in many cases after embarkation—the necessity of more vigorous inspection of the men before embarkation.

Rheumatism caused 32 admissions and 1 death, giving the respective annual rates of 25·1 and ·78 per 1,000. Compared with the previous year, the former is higher by 1·9 and the latter contrasts with *nil*. The admissions from *tubercular diseases* were 5, and 1 death occurred; the rate for the former, 3·9 per 1,000, is lower than that for the previous year by 1·3, and the death rate, ·78 per 1,000, is higher by ·35. No case of *scurvy or purpura* occurred, as compared with one during the previous year. Under *other diseases* are ecorded 4 cases of anæmia.

Local Diseases.—Diseases of the *nervous system* caused 30 admissions and 1 death; the rate for the former, 23·6 per 1,000, exceeds that for the previous year by 14·6, and for the latter, ·78 per 1,000, is lower by ·08. The cases were sunstroke 22, epilepsy 4, dementia 2, mania 1, neuralgia 1. Of the cases of sunstroke, 14 occurred on H.M.S. "Jumna" from Portsmouth to Bombay between 21st August and 19th September, 4 on H.M.S. "Himalaya" from Portsmouth to Bombay between 14th August and 10th September, 3 on H.M.S. "Tyne" from England to Hong Kong between 4 December 1879 and 11th February 1880, and 1 on H.M.S. "Malabar" among men embarked at Portsmouth for Bombay between 16th August and 12th September; in this last case the result was death. From diseases of the *respiratory system*, 60 admissions and 1 death occurred, the annual rates for the former, 47·1 per 1,000, and for the latter, ·78, are lower than the corresponding rates for the previous year by 20·8 and 1·37 per 1,000 respectively. The cases were bronchitis 36, pneumonia 21, pleurisy 2, laryngitis 1; the death was from pneumonia. The admissions from diseases of the *digestive system*, 141, give the annual rate of 110·7 per 1,000, which is higher by 21·3 than the rate for previous year; no death occurred during either year. The principal cases were tonsillitis 93, dyspepsia 16, diarrhœa 15, dysentery 2, stomatitis 4. Diseases of the *urinary system*. The admissions from gonorrhœa 270, give the annual rate of 212·1 per 1,000, its sequelæ caused 17 admissions, or 13 3 per 1,000; these rates exceed those for the previous year by 96·4 and 4·7 per 1,000 respectively. The remarks already made as to the necessity of increased vigilance of inspection for the detection of syphilis among men previous to embarkation are much strengthened by this marked excess of gonorrhœa among them. Diseases of the *cutaneous system* caused 142 admissions, the annual rate, 111·5 per 1,000, is slightly below that for the previous year; the principal cases were itch 78, ulcer 21, boils and eczema, 11 of each.

From *debility* the admissions were 13, giving a rate of 10·2 per 1,000, which is rather lower than that for the previous year. Under the heading of *poisons*, one case of *delirium tremens* occurred, no death. Under the heading of *general injuries*, one case of severe scald is recorded as having occurred accidentally in the galley of the troopship "Thames" during rough weather. The admissions

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Troops on Board Ship.

from *local injuries* were 92, giving the annual rate of 72·3 per 1,000, which is fractionally higher than that for the previous year; the principal cases were wounds 31, contusions 29, sprains 13, burns and scalds 10, fractures 7. No death resulted from either class of injuries. On board H.M.S. "Jumna," on voyage from Portsmouth to Bombay, a man attempted to jump overboard. He was kept under observation during the rest of the voyage.

II.—Troops Returning Home from Abroad.

The number of effective non-commissioned officers and men who embarked for England from stations abroad was 10,406, giving the average annual strength of 793; among whom occurred 569 admissions into hospital and 12 deaths. The annual admission rate, 717·5 per 1,000, exceeds that for the previous year and the average for the previous 10 years by 128·2 and 207·6 per 1,000 respectively. The annual death rate, 15·13 per 1,000, is lower than that for the previous year by 2·65 per 1,000, but exceeds the average for the previous 10 years by ·88 per 1,000.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract, No. XL.

General Diseases.—The total number of admissions was 243, and of deaths 2. The respective annual rates, 306·4 and 2·52, are lower than the corresponding rates for the previous year by 1·8 and 3·41 per 1,000. In the *febrile class*, 146 admissions and 2 deaths give the annual rates of 184·1 and 2·52, which are lower than the corresponding rates for the previous year by 51·3 and 2·56 per 1,000 respectively. The cases were ague 80, simple continued fever 51, febricula 9, enteric fever 5, and remittent fever 1. The deaths were 1 from enteric and 1 from simple continued fever. Of the cases of ague 74 occurred among troops returning from India; of the cases of simple continued fever, 18 occurred in H.M.S. "Jumna" between 8th November and 9th December, and 15 in H.M.S. "Orontes" between 31st October and 25th November among troops returning from India; 17 and 1 death in H.M.S. "Orontes" between 2nd April and 14th May, and 1 case in the "Walmer Castle" between 3rd April and 10th May among troops returning from South Africa; the 5 cases of enteric fever and 1 death from that disease occurred in the "Orontes" during the voyage from South Africa noted above, it is highly probable that some of the cases of simple continued fever, which "was of a low serious type," were of the enteric order; of the cases of febricula, 7 occurred among men returning from India and 2 among those from the Cape; the case of remittent fever occurred during the voyage of H.M.S. "Serapis" from Bombay between 13th November and 11th December.

The admissions from the *constitutional group* were 97, giving the annual rate of 122·3 per 1,000, which exceeds that for the previous year by 49·5. No death occurred, the death rate for the previous year having been ·85 per 1,000; *rheumatism* caused 22 admissions, giving the annual rate of 27·7 per 1,000, which exceeds that for the previous year by 10·8; *syphilis primary* caused 65 and *secondary* 6 admissions, the respective annual rates, 82·0 and 7·6 per 1,000, are higher than those for the previous year by 41·3 and ·8. Of the cases of *primary syphilis* among men returning from India, there were 46, among those from the Cape 7, Gibraltar 6, China 5, and Bermuda 1. *Tubercular diseases* caused 2 admissions and no death, the annual rate for the former, 2·5 per 1,000, is lower than that for the previous year by 3·4, the death rate for the previous year was ·85 per 1,000. *Scurvy and purpura* caused no admissions as compared with 1 during the previous year. Under *other diseases*, general dropsy caused 2 admissions, or 2·5 per 1,000.

Local Diseases.—Diseases of the *nervous systems* caused 5 admissions and 1 death, the annual rates for the former, 6·3 and for the latter 1·26, are lower than the corresponding rates for the previous year by 2·2 and 1·28 per 1,000 respectively. The cases were, epilepsy 2, paralysis 1, melancholia 1, and neuralgia 1; the death was from epilepsy. Under diseases of the *circulatory system*, 1 case of aortic valve disease terminated fatally, causing the annual death rate of 1·26 per 1,000, which is ·43 lower than that for the previous year.

Diseases of the *respiratory system* caused 38 admissions and 1 death, the annual rate for the former, 47·9 per 1,000, exceeds that for the previous year by

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11·5, and for the latter, 1·26, is lower by 2·12 per 1,000; the cases were bronchitis 32, pneumonia 6; the death was from bronchitis. *Troops on Board Ship.*

The admissions from diseases of the *digestive system* were 86 and the deaths 5, the annual rates for the former, 108·4 and for the latter 6·31 per 1,000, are higher than the corresponding rates for the previous year by 36·4 and 3·77 per 1,000 respectively; the principal cases were diarrhœa 35, dysentery 23, dyspepsia 11, tonsillitis 8, hepatitis 5; the deaths were from dysentery 3, hepatitis 1, and cæcal abscess 1.

Diseases of the *urinary system*. Gonorrhœa caused 89 and its sequelæ 10 admissions, giving the respective annual rates of 112·2 and 12·6 per 1,000, which exceed the corresponding rates for the previous year by 82·6 and 9·2 per 1,000 respectively. No admissions occurred under the heading of *other diseases*, the rate from which for the previous year having been 8·8 per 1,000.

Diseases of the *cutaneous system* caused 30 admissions, being at the annual rate of 37·8, which exceeds the rate for the previous year by 7·3 per 1,000; the principal cases were, ulcers 15, boils 5, itch 4, eczema 3.

Debility caused 19 admissions, giving the annual rate of 24·0, which exceeds that for the previous year by 13·9 per 1,000.

Under poisons, 3 cases of *delirium tremens* caused an annual admission rate of 3·8 per 1,000, which is fractionally lower than the rate for the previous year; one case terminated fatally, causing the annual death rate of 1·26 per 1,000 as compared with *nil* for the previous year.

Injuries.—Under *general injuries* is returned 1 *suicidal* death from asphyxia by drowning, the subject of which was a man undergoing a term of imprisonment in H.M.S. "Tamar" during the voyage from Bermuda to England. No admission occurred. *Local injuries* caused 16 admissions, giving the annual rate of 20·2, which is lower than the rate for the previous year by 17·0 per 1,000. No death occurred, the death rate for the previous year having been ·85 per 1,000. The cases were wounds 6, including 1 of throat *self-inflicted* during the voyage of H.M.S. "Himalaya" from Gibraltar, and 1 from gunshot on board H.M.S. "Jumna" from Bombay, as to cause or nature of which no information has been given, contusion 5, sprain 4, and fracture 1. A man suffering from mania, returning from India on board H.M.S. "Serapis," attempted to strangle himself—his third recorded attempt at suicide.

III.—Troops proceeding from One Station Abroad to Another.

The total number of non-commissioned officers and men proceeding from one station abroad to another was 7,046, giving the equivalent annual strength of 347, among whom occurred 278 admissions and 1 death, giving the respective annual rates of 801·2 and 2·88 per 1,000; as compared with the corresponding rates for the previous year the former is higher by 372·6, the latter lower by 3·60 per 1,000. Compared with the average for the previous 10 years the former is higher by 31·5 and the latter lower by 9·64 per 1,000.

The admissions and deaths in the various classes and orders of diseases are shown in Abstract, No. XL.

General Diseases.—The total number of admissions was 69. The total annual admission rate, 198·9 per 1,000, exceeds that for the previous year by 64·2 per 1,000. No death occurred, the death rate for the previous year having been 1·62 per 1,000. From the *febrile group* the admissions were 30, giving the annual admission rate of 86·5 per 1,000, which is higher than that for the previous year by 49·2. No death occurred during either year. The cases were, febricula 12, simple continued fever 10, ague 5, remittent fever 1, and enteric fever 2, the two last-named cases occurred in H.M.S. "Euphrates," on the voyage from Malta to Bombay between 19th August and 8th September, in each instance the disease had probably been contracted in Malta; of the cases of simple continued fever, 9 occurred in H.M.S. "Orontes" from Gibraltar to Bombay (between 4th August and 2nd September); 1 of serious nature was landed at Malta; the case of remittent fever occurred in H.M.S. "Himalaya" from Bermuda to Gibraltar. From the *constitutional group* the admissions were 39, being at the annual rate of 112·4, which exceeds that for the previous year by 15·0 per 1,000. The death rate *nil* contrasts with 1·62 per 1,000 for the previous year. *Rheumatism* caused 3 admissions, giving the annual rate of 8·6, which is lower than that for the previous year by 14·1

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Troops on Board Ship.

per 1,000. No death occurred, the rate for the previous year having been 1·62 per 1,000. *Syphilis* caused in its primary form 30 and in its secondary 4 admissions, giving the respective annual rates of 86·5 and 11·5 per 1,000. Compared with the corresponding rates for the previous year the former is higher by 19·9 and the latter by 9·9 per 1,000; of the cases of primary syphilis, 11 occurred in H.M.S. "Orontes" from Gibraltar to Bombay, 9 in H.M.S. "Crocodile" from Halifax to Gibraltar and Malta, 8 in H.M.S. "Himalaya" from Bermuda to Gibraltar. Under *tubercular diseases*, 1 case of phthisis pulmonalis caused the annual admission rate of 2·9, which is lower than that for the previous year by 2·0 per 1,000; no death occurred during either year. *Scurvy and purpura*, 1 case of the latter disease occurred in H.M.S. "Euphrates" from Malta to Bombay, causing the admission of 2·9 per 1,000 as compared with *nil* for the previous year, the case is not specially referred to by the medical officer in charge. Under *other diseases* no admissions or deaths occurred.

Local Diseases.—Diseases of the *nervous system* caused 7 admissions and 1 death, giving the respective annual rates of 20·2 and 2·28 per 1,000, compared with the rates for the previous year, the former is higher by 15·3 and the latter by ·66 per 1,000. The cases were, sunstroke 6, of which 1 terminated fatally, neuralgia 1. Of the cases of sunstroke, 4 occurred in H.M.S. "Euphrates" from Malta to Bombay between 19th August and 8th September, there were also 4 cases among the ship's company; 1 with fatal result in H.M.S. "Malabar" from Malta to Bombay between 25th August and 12th September, and 1 in H.M.S. "Orontes" from Gibraltar to Bombay between 4th August and 2nd September. Diseases of the *respiratory system* caused 12 admissions, giving an admission rate of 34·6 per 1,000, which exceeds by 8·6 the rate for the previous year, the cases were all bronchitis; no death occurred. The admissions from diseases of the *digestive system* were 25, giving an annual rate of 72·0, which is higher than that for the previous year by 26·5 per 1,000; the cases were, tonsillitis 1, diarrhœa 7, dyspepsia 6, jaundice 2, hæmorrhoids 1, and vomiting 1; no death occurred, the death rate for the previous year having been 1·62. Diseases of the *urinary system*, gonorrhœa caused 55 and its sequelæ 6 admissions, causing an admission rate of 158·5 and 17·3 per 1,000 respectively. Compared with the corresponding rates for the previous year the former is higher by 121·2, the latter by 14·1 per 1,000; of the cases of gonorrhœa, 32 occurred in H.M.S. "Orontes" between Gibraltar and Bombay, 9 in H.M.S. "Crocodile" from Halifax to Gibraltar, and 7 in H.M.S. "Euphrates" from Malta to Bombay. Under *other diseases* no admissions occurred, the rate under this heading for the previous year having been 17·3 per 1,000. Diseases of the *cutaneous system* caused 34 admissions, giving the annual rate of 98·0, which, exceeds that for the previous year by 31·4 per 1,000; the principal cases were boils 11, ulcers 8, and eczema, itch, and tinea 4, respectively. *Debility*, 1 admission, no death. *Poisons*, 2 admissions, delirium tremens 1, alcohol 1, no death.

Injuries.—No cases or deaths referred to *general injuries*. The admissions from *local injuries* were 37, giving the annual admission rate of 106·6, which exceeds that for the previous year by 59·5 per 1,000; the cases were, wounds 14, sprains 11, contusions 8, burns and scalds 3, fracture 1, the cases are all returned as having been of accidental nature; no death occurred.

IV.—Invalids Returning to England.

The number of invalids embarked for England was 4,026, among whom 38 deaths occurred at sea; these are accounted for, as in former years, in the tables showing the sickness and mortality of the Commands from which the men had been invalided.

Black Troops.

The number of black troops proceeding from one foreign station to another was 1,305, giving an annual average of 87. Among these there were 97 admissions into hospital, being in the ratio of 1149·0 per 1,000 of the average strength. Malarial fevers and venereal diseases were the principal causes of admissions. There were no deaths.

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ABSTRACTS I. TO XLII.

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ABSTRACT No. 1.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into serving in the UNITED KINGDOM during the Year 1880, with the Ratios

Orders.	Diseases. (Average Strength in Annual Returns, 83,895. †Average Strength, including Men detached, 87,843.)	Admissions into Hospital.	Died. With the Regiment.	Died. Absent from the Regiment.	Died. Total.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*						
	Febrile Group.						
	Eruptive Fevers	487	5	—	5	—	21·34
	Continued „	1,402	22	1	23	—	47·17
	Yellow Fever	—	—	—	—	—	—
	Paroxysmal Fevers	1,497	—	—	—	5	46·21
	Cholera	3	—	—	—	—	·01
	Other diseases	682	5	—	5	—	24·40
	Total	4,071	32	1	33	5	139·18
	Constitutional Group.						
	Rheumatism	3,868	3	1	4	118	196·46
	Primary Syphilis	8,036	—	—	—	—	601·01
	Secondary „	2,556	1	1	2	62	198·20
	Tubercular Diseases	937	153	21	174	365	120·14
	Scurvy and Purpura	23	—	—	—	1	·91
	Other diseases	134	5	2	7	11	10·82
	Total	15,054	162	25	187	557	1127·54
	II.—*Local Diseases.*						
	Diseases of the—						
1	Nervous System	1,100	38	5	43	225	102·86
2	Eye	1,246	—	—	—	59	64·08
3	Ear	431	—	—	—	56	31·66
4	Nose	52	—	—	—	1	2·78
5	Circulatory System	1,370	77	4	81	390	115·00
6	Absorbent „	1,018	—	—	—	4	78·93
7	Ductless Glands	6	—	—	—	—	·21
8	Respiratory System	6,348	109	11	120	119	310·58
9	Digestive „	9,098	42	3	45	125	296·32
10	Urinary System — Gonorrhœa	8,930	—	—	—	—	493·76
	Urinary System — Sequelæ of Gonorr.	1,101	—	—	—	4	69·05
	Urinary System — Other diseases	1,047	19	—	19	38	49·87
11	Generative System	875	—	—	—	14	44·86
12	Organs of Locomotion	568	4	—	4	89	45·85
13	Cellular Tissue	1,989	—	—	—	8	86·22
14	Cutaneous System	10,309	—	—	—	26	382·21
	III.—*Debility*	926	—	—	—	178	66·75
*	IV.—*Poisons*	178	6	—	6	—	4·17
	V.—*Injuries.*						
1	General	11	23	2	25	1	·39
2	Local	9,192	30	2	32	79	347·75
3	In action	—	—	—	—	—	·20
	No appreciable disease	253	—	—	—	—	6·80
	Cause unknown (refers to deaths only).	—	1	4	5	—	—
	General total	75,173	543	57	600	1,978	3866·97

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

† Ratios of deaths and invalids calculated on this strength.

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
5·8	·06	—	·26	4·9	·04	—	·26
16·7	·26	—	·56	15·9	·28	—	·60
—	—	—	—	—	—	—	—
17·9	—	·06	·55	17·2	—	·05	·61
8·1	—	—	·29	—	—	—	—
	·06	—		11·8	·07	—	·33
48·5	·38	·06	1·66	49·8	·39	·05	1·80
40·1	·05	1·34	2·34	40·6	·12	1·62	2·35
95·8	—	—	7·17	63·4	—	—	4·77
30·5	·02	·71	2·86	29·0	·04	·69	2·10
11·1	1·98	4·15	1·43	11·2	2·78	4·46	1·87
·3	—	·01	·01	·2	—	—	·01
1·6	·08	·13	·13	1·6	·08	·15	·22
179·4	2·13	6·34	13·44	146·0	3·02	6·92	10·82
13·1	·49	2·56	1·23	11·8	·39	2·76	·99
14·9	—	·67	·76	14·0	—	·79	·76
5·1	—	·64	·38	5·5	—	·60	·34
·6	—	·01	·03	·5	—	·02	·02
16·3	·92	4·44	1·37	13·1	·64	4·61	1·14
12·1	—	·05	·94	15·1	—	·06	1·34
·1	—	—	3·70	·1	—	—	
75·7	1·37	1·35		96·9	1·62	1·65	4·68
108·5	·51	1·42	3·53	102·3	·43	2·30	3·39
106·5	—	—	5·89	76·3	—	—	3·84
13·1	—	·05	·82	10·8	·01	·17	·74
12·5	·21	·43	·59	10·2	·19	·39	·57
10·4	—	·16	·53	11·2	—	·19	·60
6·8	·05	1·01	·55	5·8	·05	1·24	·47
23·7	—	·09	1·03	22·4	·05	·09	1·02
122·9	—	·30	4·56	111·0	—	·36	4·12
11·0	—	2·03	·80	11·7	—	3·06	·92
2·1	·07	—	·05	1·8	·12	—	·05
·1	·28	·01	4·15	·1	·38	—	·05
109·6	·36	·90		102·5	·24	·97	4·24
—	—	—	·08	—	—	—	—
3·0	—	—		3·2	—	—	·13
—	·06	—	—	—	·02	—	—
896·0	6·83	22·52	46·09	822·1	7·55	26·23	42·03

to 1889 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT A.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the NORTHERN DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 8,564. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	30	—	—	·74
	Continued „	101	2	—	3·30
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	156	—	—	4·85
	Cholera	—	—	—	—
	Other diseases	72	1	—	1·77
	Total	359	3	—	10·66
	Constitutional Group.				
	Rheumatism	334	—	18	21·39
	Primary Syphilis	941	—	—	75·47
	Secondary „	302	1	7	21·06
	Tubercular Diseases	107	22	26	15·28
	Scurvy and Purpura	1	—	—	·07
	Other diseases	8	—	4	1·32
	Total	1,693	23	55	134·59
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	125	3	20	10·61
2	Eye	99	—	4	4·53
3	Ear	27	—	4	1·76
4	Nose	4	—	—	·14
5	Circulatory System	92	8	26	9·57
6	Absorbent „	107	—	1	8·34
7	Ductless Glands	—	—	—	—
8	Respiratory System	602	16	11	28·62
9	Digestive „	901	6	14	27·64
10	Urinary System — Gonorrhœa	1,097	—	—	53·27
	Urinary System — Sequelæ of Gonorrhœa	169	—	—	9·99
	Urinary System — Other diseases	82	2	1	2·52
11	Generative System	95	—	2	4·75
12	Organs of Locomotion	60	—	6	4·81
13	Cellular Tissue	205	—	2	6·96
14	Cutaneous System	1,293	—	4	35·92
	III.—*Debility*	86	—	10	5·55
	IV.—*Poisons*	19	—	—	·51
	V.—*Injuries.*				
1	General	—	3	—	—
2	Local	1,100	6	10	38·30
3	In action	—	—	—	—
	No appreciable disease	17	—	—	·51
	Cause unknown (refers to deaths only)	—	1	—	—
	General total	8,232	71	170	399·55

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000, for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
3·5	—	—	·09	2·5	—	—	·14
11·8	·23	—	·38	13·4	·12	—	·27
—	—	—	—	—	—	—	—
18·2	—	—	·56	10·9	—	—	·26
—	—	—	—	—	—	—	—
8·4	·12	—	·21	6·5	—	—	·18
41·9	·35	—	1·24	33·3	·12	—	·85
39·0	—	2·10	2·50	37·8	·25	·88	2·11
109·9	—	—	8·81	83·8	—	—	6·14
35·2	·12	·82	2·46	38·2	—	·75	2·60
12·5	2·57	3·03	1·79	14·2	3·38	3·75	1·51
·1	—	—	·01	—	—	—	—
·9	—	·47	·15	1·2	—	·38	·44
197·6	2·69	6·42	15·72	175·2	3·63	5·76	12·80
14·6	·35	2·34	1·24	14·5	·50	3·12	1·15
11·6	—	·47	·53	13·5	—	1·00	·62
3·2	—	·47	·21	4·0	—	·25	·16
·5	—	—	·02	·6	—	—	·01
10·7	·93	3·03	1·12	13·9	1·00	5·76	·92
12·5	—	·12	·97	16·3	—	·25	1·33
—	—	—	—	—	—	—	—
70·3	1·87	1·28	3·34	102·8	2·38	1·75	4·29
105·2	·70	1·63	3·23	95·6	·50	2·75	2·71
128·1	—	—	6·22	93·0	—	—	3·87
19·7	—	—	1·17	18·8	—	—	1·02
9·6	·23	·12	·29	8·4	·63	·50	·47
11·1	—	·23	·55	12·1	—	·38	·63
7·0	—	·70	·56	5·4	·25	1·50	·49
23·9	—	·23	·81	24·6	·12	·25	1·10
151·0	—	·47	4·19	116·8	—	·88	3·61
10·0	—	1·17	·65	11·3	—	2·50	·66
2·2	—	—	·05	2·0	·12	—	·05
—	·35	—	—	·4	·50	—	·02
128·5	·70	1·17	4·49	116·0	·38	1·75	4·71
—	—	—	—	—	—	—	—
2·0	—	—	·06	1·4	—	—	·03
—	·12	—	—	—	—	—	—
961·2	8·29	19·85	46·66	879·9	10·13	28·40	41·50

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT B.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the EASTERN DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 4,370. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	33	—	—	1·39
	Continued „	63	1	—	2·46
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	171	—	—	6·29
	Cholera	—	—	—	—
	Other diseases	21	1	—	·63
	Total	288	2	—	10·77
	Constitutional Group.				
	Rheumatism	167	—	7	10·63
	Primary Syphilis	315	—	—	22·01
	Secondary „	104	—	4	8·51
	Tubercular Diseases	58	8	16	8·12
	Scurvy and Purpura	1	—	1	·11
	Other diseases	3	1	1	·54
	Total	648	9	29	49·92
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	61	5	12	5·96
2	Eye	62	—	4	3·40
3	Ear	23	—	3	1·26
4	Nose	—	—	—	—
5	Circulatory System	75	6	10	5·71
6	Absorbent „	72	—	—	4·63
7	Ductless Glands	—	—	—	—
8	Respiratory System	416	8	2	19·28
9	Digestive „	513	4	11	16·73
10	Urinary System — Gonorrhœa	475	—	—	23·70
	Urinary System — Sequelæ of Gonorrhœa	41	—	—	2·70
	Urinary System — Other diseases	30	—	—	1·63
11	Generative System	50	—	—	1·96
12	Organs of Locomotion	24	—	3	1·65
13	Cellular Tissue	105	—	—	3·36
14	Cutaneous System	509	—	1	17·24
	III.—*Debility*	72	—	27	5·79
	IV.—*Poisons*	13	—	—	·24
	V.—*Injuries.*				
1	General	—	1	—	—
2	Local	487	—	4	17·56
3	In action	—	—	—	—
	No appreciable disease	17	—	—	1·13
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	3,981	35	106	194·62

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000, for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
7·6	—	—	·32	1·8	—	—	·13
14·4	·23	—	·56	21·7	—	—	·19
—	—	—	—	—	—	—	—
39·1	—	—	1·44	31·4	—	·26	·62
—	—	—	—	—	—	—	—
4·8	·23	—	·14	4·6	—	—	·72
65·9	·46	—	2·46	59·5	—	·26	1·66
38·2	—	1·60	2·43	48·2	—	1·54	2·29
72·1	—	—	5·04	56·7	—	—	4·51
28·8	—	·91	1·95	28·3	—	·26	2·46
13·3	1·83	3·66	1·86	14·2	3·86	6·70	·82
·2	—	·23	·02	·3	—	—	·03
·7	·23	·23	·12	1·8	·26	—	·98
148·3	2·06	6·63	11·42	149·5	4·12	8·50	11·09
13·9	1·14	2·74	1·86	11·6	1·03	3·35	1·13
14·2	—	·91	·78	15·0	—	·77	·80
5·3	—	·69	·29	2·6	—	·52	·27
—	—	—	—	1·3	—	—	·02
17·1	1·37	2·29	1·31	10·6	·77	3·09	·98
16·5	—	—	1·06	16·2	—	·26	1·30
—	—	—	—	—	—	—	—
95·2	1·83	·46	4·41	126·8	2·32	1·29	6·37
117·4	·91	2·52	3·83	114·2	·26	2·84	4·01
108·7	—	—	5·42	55·2	—	—	2·02
9·4	—	—	·62	15·2	·26	—	·77
6·9	—	—	·37	7·5	·52	·26	1·76
11·4	—	—	·45	17·0	—	—	1·52
5·5	—	·69	·38	2·6	—	·26	·55
24·0	—	—	·77	25·3	·26	—	2·14
116·5	—	·23	3·95	79·9	—	·52	2·39
16·5	—	6·18	1·32	8·2	—	3·35	·82
3·0	—	—	·05	9·8	—	—	·18
—	·23	—	—	—	·52	—	—
111·4	—	·91	4·02	92·3	·26	·77	3·68
—	—	—	—	—	—	—	—
3·9	—	—	·26	1·5	—	—	·05
—	—	—	—	—	—	—	—
911·0	8·00	24·25	44·53	821·8	10·31	26·04	43·51

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT C.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, and the WESTERN DISTRICT during the Year 1880, with the ratios

Orders.	Average Strength, 4,829. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	41	—	—	1·90
	Continued „	43	—	—	1·59
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	87	—	—	4·24
	Cholera	—	—	—	—
	Other diseases	31	—	—	·67
	Total	202	—	—	8·40
	Constitutional Group.				
	Rheumatism	180	—	7	10·57
	Primary Syphilis	296	—	—	24·31
	Secondary „	139	—	1	14·12
	Tubercular Diseases	54	3	20	5·53
	Scurvy and Purpura	3	—	—	·19
	Other diseases	7	2	1	·51
	Total	679	5	29	55·23
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	80	4	11	4·42
2	Eye	52	—	2	2·17
3	Ear	26	—	3	1·20
4	Nose	2	—	—	·19
5	Circulatory System	61	7	18	5·04
6	Absorbent „	41	—	—	3·35
7	Ductless Glands	—	—	—	—
8	Respiratory System	354	4	7	21·09
9	Digestive „	471	1	9	15·97
10	Urinary System — Gonorrhœa	653	—	—	39·89
	Urinary System — Sequelæ of Gonorrhœa	77	—	1	3·99
	Urinary System — Other diseases	50	1	3	3·16
11	Generative System	38	—	—	2·64
12	Organs of Locomotion	17	—	6	2·21
13	Cellular Tissue	77	—	—	3·79
14	Cutaneous System	534	—	1	12·24
	III.—*Debility*	38	—	7	5·92
	IV.—*Poisons*	12	—	—	·46
	V.—*Injuries.*				
1	General	—	—	—	—
2	Local	450	4	4	18·71
3	In action	—	—	—	—
	No appreciable disease	14	—	—	·30
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	3,928	26	101	210·37

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000, for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
8·5	—	—	·39	5·6	—	—	·19
8·9	—	—	·33	15·4	·82	—	·75
—	—	—	—	—	—	—	—
18·0	—	—	·88	12·4	—	—	·55
—	—	—	—	—	—	—	—
6·4	—	—	·14	3·1	—	—	·07
41·8	—	—	1·74	36·5	·82	—	1·56
37·3	—	1·45	2·19	38·3	—	1·44	2·72
61·3	—	—	5·03	36·9	—	—	2·97
28·8	—	·21	2·92	20·6	·21	·41	1·53
11·2	·62	4·14	1·15	10·7	2·47	4·12	1·64
·6	—	—	·04	—	—	—	—
1·4	·41	·21	·11	·8	—	·21	·06
140·6	1·03	6·01	11·44	107·3	2·68	6·18	8·92
16·6	·83	2·28	·92	13·4	·21	2·88	·96
10·8	—	·41	·45	11·3	—	·21	1·13
5·4	—	·62	·25	4·5	—	·21	·17
·4	—	—	·04	·8	—	—	·08
12·6	1·45	3·73	1·04	10·5	·61	3·09	·94
8·5	—	—	·69	11·8	—	—	·59
—	—	—	—	—	—	—	—
73·3	·83	1·45	4·37	72·1	1·86	1·24	3·52
97·5	·21	1·86	3·31	99·5	·21	3·50	3·65
135·2	—	—	8·26	80·4	—	—	4·33
15·9	—	·21	·81	9·1	—	·21	·63
10·4	·21	·62	·67	11·1	—	·21	·61
7·9	—	—	·55	10·9	—	·21	·66
3·5	—	1·24	·46	6·6	—	1·44	·40
15·9	—	—	·75	16·3	—	—	1·14
110·6	—	·21	2·54	101·0	—	·21	3·96
7·9	—	1·45	1·23	9·3	—	3·09	1·48
2·5	—	—	·10	1·4	·41	—	·06
—	—	—	—	·2	·41	—	·14
93·2	·83	83	3·88	88·2	—	1·03	3·89
—	—	—	—	—	—	—	—
2·9	—	—	·06	6·2	—	—	·16
—	—	—	—	—	—	—	—
813·4	5·39	20·92	43·56	708·4	7·21	23·71	38·98

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT D.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the SOUTHERN DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 7,676. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	57	—	—	2·85
	Continued „	131	—	—	3·51
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	135	—	2	4·32
	Cholera	2	—	—	·01
	Other diseases	55	—	—	2·22
	Total	380	—	2	12·91
	Constitutional Group.				
	Rheumatism	354	1	9	20·93
	Primary Syphilis	507	—	—	39·34
	Secondary „	171	—	6	14·45
	Tubercular Diseases	89	15	28	10·17
	Scurvy and Purpura	2	—	—	·06
	Other diseases	13	—	—	1·05
	Total	1,136	16	43	86·00
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	99	1	23	10·69
2	Eye	103	—	2	5·87
3	Ear	41	—	7	5·29
4	Nose	5	—	1	·31
5	Circulatory System	139	4	46	13·50
6	Absorbent „	88	—	—	6·98
7	Ductless Glands	—	—	—	—
8	Respiratory System	606	7	18	33·28
9	Digestive „	985	11	23	31·55
10	Urinary System — Gonorrhœa	822	—	—	50·54
	Urinary System — Sequelæ of Gonorrhœa	84	—	—	5·25
	Urinary System — Other diseases	126	4	1	5·72
11	Generative System	88	—	1	4·61
12	Organs of Locomotion	52	—	6	4·89
13	Cellular Tissue	151	—	—	8·36
14	Cutaneous System	992	—	3	41·90
	III.—*Debility*	98	—	15	7·06
	IV.—*Poisons*	18	—	—	·27
	V.—*Injuries.*				
1	General	1	1	—	·06
2	Local	929	—	13	37·15
3	In action	—	—	—	·20
	No appreciable disease	43	—	—	·89
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	6,986	44	204	373·28

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
7·4	—	—	·37	3·9	—	—	·27
17·1	—	—	·46	11·8	·13	—	·50
—	—	—	—	—	—	—	—
17·6	—	·26	·56	42·0	—	—	1·86
·2	—	—	·29	—	—	—	—
7·2	—	—		5·1	·27	—	·20
49·5	—	·26	1·68	62·8	·40	—	2·83
46·1	·13	1·17	2·73	55·3	·13	3·22	3·77
66·0	—	—	5·12	30·8	—	—	2·29
22·3	—	·78	1·88	19·2	—	·67	1·79
11·6	1·95	3·65	1·32	11·3	3·09	5·10	2·24
·2	—	—	·01	·7	—	—	·10
1·7	—	—	·14	2·8	—	·40	·47
147·9	2·08	5·60	11·20	120·1	3·22	9·39	10·66
12·9	·13	3·00	1·39	12·4	·40	3·35	1·39
13·4	—	·26	·76	11·9	—	·67	·53
5·3	—	·91	·69	7·1	—	·54	·49
·7	—	·13	·04	·7	—	—	·01
18·1	·52	5·99	1·76	14·1	·54	5·37	1·81
11·5	—	—	·91	12·4	—	—	1·23
—	—	—	—	—	—	—	—
79·0	·91	2·35	4·34	131·1	1·08	2·28	6·74
128·3	1·43	3·00	4·11	144·2	·40	3·09	5·34
107·1	—	—	6·58	66·1	—	—	3·19
11·0	—	—	·68	9·9	—	·13	1·11
16·4	·52	·13	·75	12·9	—	·27	·39
11·5	—	·13	·60	9·5	—	—	·51
6·8	—	·78	·64	5·4	—	·67	·55
19·7	—	—	1·09	19·2	·13	·13	·88
129·2	—	·39	5·46	110·0	—	·27	4·38
12·8	—	1·95	·92	16·9	—	5·37	1·59
2·3	—	—	·03	1·9	—	—	·05
·1	·13	—	·01	·1	·27	—	—
121·0	—	1·69	4·84	115·7	·40	1·21	4·98
—	—	—	·03	—	—	—	—
5·6	—	—	·12	5·6	—	—	·36
—	—	—	—	—	—	—	—
910·1	5·73	26·57	48·63	890·0	6·84	32·74	49·02

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT E.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the CHATHAM DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 4,031. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	11	—	—	·51
	Continued ,,	31	1	—	·90
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	18	—	—	1·12
	Cholera	—	—	—	—
	Other diseases	16	—	—	·38
	Total	76	1	—	2·91
	Constitutional Group.				
	Rheumatism	180	—	9	11·92
	Primary Syphilis	250	—	—	19·66
	Secondary ,,	86	—	6	8·77
	Tubercular Diseases	44	4	24	4·17
	Scurvy and Purpura	1	—	—	·04
	Other diseases	3	—	—	·11
	Total	564	4	39	44·67
	II. *Local Diseases.*				
	Diseases of the—				
1	Nervous System	47	1	10	3·72
2	Eye	58	—	4	3·90
3	Ear	36	—	6	2·86
4	Nose	1	—	—	·19
5	Circulatory System	56	4	13	3·88
6	Absorbent ,,	43	—	—	3·41
7	Ductless Glands	—	—	—	—
8	Respiratory System	385	3	3	19·41
9	Digestive ,,	459	2	5	17·30
10	Urinary System — Gonorrhœa	397	—	—	24·25
	Urinary System — Sequelæ of Gonorrhœa	52	—	—	2·48
	Urinary System — Other diseases	61	1	4	1·96
11	Generative System	27	—	—	1·21
12	Organs of Locomotion	50	—	15	3·43
13	Cellular Tissue	103	—	—	6·16
14	Cutaneous System	447	—	3	13·36
	III.—*Debility*	62	—	16	3·69
	IV.—*Poisons*	1	1	—	·01
	V.—*Injuries.*				
1	General	—	—	—	—
2	Local	372	—	5	13·70
3	In action	—	—	—	—
	No appreciable disease	13	—	—	·33
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	3,310	17	123	172·83

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
2·7	—	—	·13	1·2	—	—	·06
7·7	·25	—	·22	5·1	—	—	·19
—	—	—	—	—	—	—	—
4·4	—	—	·28	10·9	—	—	·36
—	—	—	—	—	—	—	—
4·0	—	—	·09	2·6	—	—	·09
18·8	·25	—	·72	19·8	—	—	·70
44·7	—	2·23	2·96	67·2	—	2·18	3·35
62·0	—	—	4·88	50·6	—	—	3·94
21·4	—	1·49	2·17	25·2	—	1·45	1·77
10·9	·99	5·96	1·03	14·5	2·66	7·25	1·32
·2	—	—	·01	·2	—	—	} ·01
·7	—	—	·03	·5	—	·24	
139·9	·99	9·68	11·08	158·2	2·66	11·12	10·39
11·7	·25	2·48	·92	10·2	—	3·87	1·18
14·4	—	·99	·97	15·2	—	·48	·78
8·9	—	1·49	·71	11·1	—	1·94	·84
·2	—	—	·05	·5	—	—	·01
13·9	·99	3·23	·96	23·7	·73	8·95	1·79
10·7	—	—	·85	10·2	—	—	·76
—	—	—	—	—	—	—	—
95·5	·74	·74	4·81	112·0	1·21	1·69	5·51
113·9	·50	1·24	4·29	117·5	—	1·94	4·26
98·5	—	—	6·02	78·8	—	—	3·93
12·9	—	—	·61	9·2	—	—	·62
15·1	·25	·99	·49	20·8	—	·24	1·15
6·7	—	—	·30	6·5	—	·48	·41
12·4	—	3·72	·85	6·0	—	1·45	·35
25·6	—	—	1·53	16·4	—	—	·50
110·9	—	·74	3·31	120·0	—	—	4·23
15·4	—	3·97	} ·92 {	35·1	—	8·95	2·68
·2	·25	—	}	1·2	—	—	·04
—	—	—	—	—	·48	—	—
92·3	—	1·24	3·40	118·7	—	1·69	5·97
—	—	—	—	—	—	—	—
3·2	—	—	·08	1·7	—	—	·02
—	—	—	—	—	—	—	—
821·1	4·22	30·51	42·87	892·8	5·08	42·80	46·12

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT F.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the SOUTH-EASTERN DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 6,857. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	53	—	—	1·68
	Continued „	71	—	—	1·87
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	518	—	1	12·92
	Cholera	—	—	—	—
	Other diseases	13	—	—	·48
	Total	655	—	1	16·95
	Constitutional Group.				
	Rheumatism	306	—	9	15·06
	Primary Syphilis	495	—	—	41·43
	Secondary „	148	—	6	10·56
	Tubercular Diseases	93	9	33	14·52
	Scurvy and Purpura	1	—	—	·03
	Other diseases	27	—	2	1·78
	Total	1,070	9	50	83·38
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	131	5	13	12·06
2	Eye	126	—	5	6·66
3	Ear	39	—	6	3·90
4	Nose	2	—	—	·04
5	Circulatory System	124	5	25	10·70
6	Absorbent „	56	—	—	3·99
7	Ductless Glands	1	—	—	·03
8	Respiratory System	687	11	5	31·67
9	Digestive „	739	—	14	27·62
10	Urinary System — Gonorrhœa	513	—	—	28·57
	Urinary System — Sequelæ of Gonorrhœa	87	—	—	6·55
	Urinary System — Other diseases	73	1	4	6·22
11	Generative System	80	—	2	4·39
12	Organs of Locomotion	53	1	5	4·01
13	Cellular Tissue	164	—	—	5·85
14	Cutaneous System	798	—	5	30·88
	III.—*Debility*	76	—	6	5·70
	IV.—*Poisons*	9	1	—	·18
	V.—*Injuries.*				
1	General	2	4	—	·12
2	Local	817	2	11	28·56
3	In action	—	—	—	—
	No appreciable disease	25	—	—	·50
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	6,327	39	152	318·53

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
7·7	—	—	·25	8·4	—	—	·26
10·4	—	—	·27	12·1	·15	—	·24
—	—	—	—	—	—	—	—
75·5	—	·15	1·88	33·2	—	·29	1·36
—	—	—	—	—	—	—	—
1·9	—	—	·07	4·9	·15	—	·16
95·5	—	·15	2·47	58·6	·29	·29	2·02
44·6	—	1·31	2·20	35·2	·15	2·62	2·19
72·2	—	—	6·04	50·8	—	—	3·54
21·6	—	·88	1·54	27·8	—	·58	2·27
13·6	1·31	4·81	2·12	12·7	1·74	5·82	1·95
·1	—	—	} ·26 {	·1	—	—	—
3·9	—	·29		4·1	—	·15	·41
156·0	1·31	7·29	12·16	130·7	1·89	9·17	10·36
19·1	·73	1·90	1·76	13·7	·15	2·77	1·18
18·4	—	·73	·97	19·2	—	1·16	1·38
5·7	—	·88	·57	5·8	—	·15	·30
·3	—	—	·01	·3	—	—	—
18·1	·73	3·64	1·56	13·0	·44	6·11	1·41
8·2	—	—	·58	6·7	—	—	·61
·1	—	—	} 4·62 {	·3	—	—	·01
100·2	1·60	·73		102·5	1·45	1·45	4·28
107·8	—	2·04	4·03	101·9	·44	3·20	3·93
74·8	—	—	4·17	59·1	—	—	3·10
12·7	—	—	·96	7·3	—	·44	·51
10·6	·15	·58	·91	7·3	—	·87	·44
11·7	—	·29	·64	9·9	—	·29	·48
7·7	·15	·73	·58	4·9	—	·87	·38
23·9	—	—	·85	21·8	—	·15	·96
116·4	—	·73	4·50	112·2	—	·15	4·42
11·1	—	·88	·88	6·8	—	2·77	·78
1·3	·15	—	·03	2·8	·29	—	·08
·3	·58	—	·02	—	·29	—	—
119·2	·29	1·60	4·16	111·5	·44	·87	5·04
—	—	—	—	—	—	—	—
3·6	—	—	·07	1·3	—	—	·04
—	—	—	—	—	—	—	—
922·7	5·69	22·17	46·45	797·6	5·68	30·71	41·71

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT G.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the HOME DISTRICT during the Year 1880, with the Ratios per

Orders.	Average Strength, 7,459. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	41	1	—	2·12
	Continued „	216	3	—	6·77
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	31	—	1	·62
	Cholera	1	—	—	—
	Other diseases	75	2	—	2·32
	Total	364	6	1	11·83
	Constitutional Group.				
	Rheumatism	321	—	15	17·83
	Primary Syphilis	1,247	—	—	87·66
	Secondary „	307	—	14	20·11
	Tubercular Diseases	84	23	61	11·91
	Scurvy and Purpura	—	—	—	·02
	Other diseases	13	—	1	·98
	Total	1,972	23	91	138·51
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	79	5	35	7·40
2	Eye	71	—	7	4·00
3	Ear	20	—	4	1·09
4	Nose	1	—	—	·02
5	Circulatory System	74	8	39	6·15
6	Absorbent „	95	—	—	8·92
7	Ductless Glands	—	—	—	—
8	Respiratory System	630	12	23	31·06
9	Digestive „	936	—	10	23·90
10	Urinary System — Gonorrhœa	854	—	—	49·00
	Urinary System — Sequelæ of Gonorrhœa	97	—	2	6·45
	Urinary System — Other diseases	106	1	6	4·55
11	Generative System	49	—	3	2·85
12	Organs of Locomotion	45	—	6	3·21
13	Cellular Tissue	271	—	3	11·28
14	Cutaneous System	838	—	2	24·21
	III.—*Debility*	93	—	20	5·40
	IV.—*Poisons*	33	1	—	·73
	V.—*Injuries.*				
1	General	3	3	—	·06
2	Local	749	2	6	26·15
3	In action	—	—	—	—
	No appreciable disease	16	—	—	·64
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	7,396	61	258	367·41

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
5·5	·13	—	·28	6·3	—	—	·40
29·0	·40	—	·91	17·4	·14	—	·63
—	—	—	—	—	—	—	—
4·2	—	·13	·08	4·7	—	—	·08
·1	—	—	—	—	—	—	—
10·0	·27	—	·31	8·5	·29	—	·24
48·8	·80	·13	1·58	36·9	·43	—	1·35
43·0	—	2·01	2·39	43·4	·29	1·42	2·46
167·2	—	—	11·75	117·1	—	—	9·63
41·2	—	1·88	2·70	35·6	—	2·28	3·01
11·3	3·09	8·18	1·60	12·4	2·99	7·55	1·73
—	—	—	} ·13 {	·6	—	—	·02
1·7	—	·13		1·7	·29	·14	·11
264·4	3·09	12·20	18·57	210·8	3·56	11·39	16·96
10·6	·67	4·69	·99	13·0	·29	3·56	1·02
9·5	—	·94	·54	12·7	—	·43	·62
2·7	—	·54	·15	3·6	—	·57	·20
·1	—	—	} ·82 {	·6	—	—	·03
9·9	1·07	5·23		11·1	·71	4·70	·96
12·7	—	—	1·20	14·5	—	·14	1·57
—	—	—	—	—	—	—	—
84·5	1·61	3·09	4·16	119·5	1·13	1·14	5·24
125·5	—	1·34	3·20	105·5	·14	·85	2·93
114·5	—	—	6·57	89·4	—	—	5·47
13·0	—	·27	·86	12·8	—	·29	·80
14·2	·13	·80	·61	13·3	·58	·85	·58
6·6	—	·40	·38	9·8	—	—	·48
6·0	—	·80	·43	7·4	—	1·28	·48
36·3	—	·40	1·51	34·5	·14	·29	1·30
112·4	—	·27	3·25	82·7	—	·14	2·64
12·5	—	2·68	·72	11·5	—	1·85	·69
4·4	·13	—	·10	2·1	·14	—	·04
·4	·40	—	·01	—	—	—	—
100·4	·27	·80	3·51	92·7	—	·71	3·45
—	—	—	—	—	—	—	—
2·1	—	—	·09	·7	—	—	·07
—	—	—	—	—	—	—	—
991·5	8·18	34·58	49·25	885·1	7·12	28·19	46

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT H.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL,* the WOOLWICH DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 5,402. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	22	—	—	2·10
	Continued „	75	—	—	1·99
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	129	—	—	4·56
	Cholera	—	—	—	—
	Other diseases	231	1	—	7·13
	Total	457	1	—	15·78
	Constitutional Group.				
	Rheumatism	178	—	4	11·34
	Primary Syphilis	399	—	—	34·21
	Secondary „	476	—	2	45·03
	Tubercular Diseases	48	13	19	7·20
	Scurvy and Purpura	1	—	—	·02
	Other diseases	20	—	2	1·73
	Total	1,122	13	27	99·53
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	30	—	12	3·68
2	Eye	39	—	1	1·73
3	Ear	25	—	2	1·48
4	Nose	3	—	—	·06
5	Circulatory System	51	5	12	4·11
6	Absorbent „	67	—	—	6·23
7	Ductless Glands	1	—	—	·04
8	Respiratory System	208	10	9	13·14
9	Digestive „	581	4	5	18·17
10	Urinary System — Gonorrhœa	429	—	—	25·15
	Urinary System — Sequelæ of Gonorrhœa	100	—	—	3·89
	Urinary System — Other diseases	60	2	2	2·53
11	Generative System	29	—	—	1·17
12	Organs of Locomotion	25	—	6	2·67
13	Cellular Tissue	118	—	1	5·01
14	Cutaneous System	571	—	—	24·91
	III.—*Debility*	33	—	10	3·26
	IV.—*Poisons*	5	2	—	·05
	V.—*Injuries.*				
1	General	1	1	—	·01
2	Local	493	1	3	18·84
3	In action	—	—	—	—
	No appreciable disease	61	—	—	·24
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	4,509	39	90	250·78

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
4·0	—	—	·39	8·1	—	—	·28
13·9	—	—	·37	4·6	—	—	·19
—	—	—	—	—	—	—	—
23·9	—	—	·84	23·9	—	—	·67
—	—	—	—	—	—	—	—
42·8	·19	—	1·32	85·2	·19	—	1·74
84·6	·19	—	2·92	121·8	·19	—	2·88
32·9	—	·74	2·10	34·8	—	·93	2·10
73·9	—	—	6·33	43·9	—	—	3·64
88·1	—	·37	8·34	57·7	—	1·48	5·17
8·9	2·40	3·52	·3	9·8	2·03	5·18	1·61
·2	—	—		·4	—	—	·01
3·7	—	·37	·32	2·6	·19	·55	·09
207·7	2·40	5·00	18·42	149·2	2·22	8·14	12·62
5·6	—	2·22	·68	9·6	·55	2·04	·93
7·2	—	·19	·32	10·7	—	1·48	·69
4·6	—	·37	·27	5·5	—	1·66	·52
·6	—	—	·01	—	—	—	—
9·5	·92	2·22	·76	9·3	·55	5·00	1·00
12·4	—	—	1·15	8·3	—	—	1·06
·2	—	—	·01	—	—	—	—
38·4	1·85	1·67	2·43	53·3	1·48	4·44	3·37
107·6	·74	·92	3·36	90·9	·19	2·22	2·64
79·4	—	—	4·66	51·3	—	—	2·91
18·5	—	—	·72	19·8	—	·37	1·35
11·1	·37	·37	·47	6·7	·19	·55	·41
5·4	—	—	·22	9·8	—	·37	·59
4·6	—	1·11	·50	6·3	—	1·30	·56
21·8	—	·19	·93	16·7	—	—	·83
105·7	—	—	4·44	79·4	—	—	3·37
6·1	—	1·85	·60	11·3	—	2·04	·69
·9	·37	—	·01	·4	·19	—	
·2	·19	—	3·49	—	·37	—	—
91·3	·19	·55		77·2	·19	·55	3·52
—	—	—	—	—	—	—	—
11·3	—	—	·05	9·8	—	—	·10
—	—	—	—	—	—	—	—
834·7	7·22	16·66	46·42	747·3	6·11	30·16	40·04

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT I.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the ALDERSHOT DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 11,068. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	87	2	—	3·51
	Continued „	200	—	—	7·23
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	54	—	—	1·55
	Cholera	—	—	—	—
	Other diseases	75	—	—	4·53
	Total	416	2	—	16·82
	Constitutional Group.				
	Rheumatism	575		21	40·32
	Primary Syphilis	823	—	—	52·79
	Secondary „	194	—	8	15·45
	Tubercular Diseases	116	13	55	13·42
	Scurvy and Purpura	5	—	—	·14
	Other diseases	10	2	—	1·25
	Total	1,723	15	84	123·37
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	168	7	29	13·87
2	Eye	269	—	14	9·99
3	Ear	104	—	13	8·61
4	Nose	18	—	—	·83
5	Circulatory System	346	10	124	30·78
6	Absorbent „	135	—	1	11·45
7	Ductless Glands	2	—	—	·12
8	Respiratory System	1,021	12	23	53·07
9	Digestive „	1,337	3	19	52·47
10	Urinary System: Gonorrhœa	1,172	—	—	64·50
	Urinary System: Sequelæ of Gonorrhœa	93	—	—	8·11
	Urinary System: Other diseases	108	—	6	6·43
11	Generative System	140	—	2	7·14
12	Organs of Locomotion	73	—	14	5·28
13	Cellular Tissue	215	—	—	10·59
14	Cutaneous System	1,337	—	4	72·00
	III.—*Debility*	139	—	35	9·53
	IV.—*Poisons*	14	—	—	·30
	V.—*Injuries.*				
1	General	3	2	1	·11
2	Local	993	3	7	46·10
3	In action	—	—	—	—
	No appreciable disease	8	—	—	·87
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	9,834	54	376	552·34

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
7·8	·18	—	·32	6·2	—	—	·27
18·1	—	—	·65	21·9	·36	—	·91
—	—	—	—	—	—	—	—
4·9	—	—	·14	6·9	—	·09	·33
—	—	—	—	—	—	—	—
6·8	—	—	·41	2·9	—	—	·09
37·6	·18	—	1·52	37·9	·36	·09	1·60
52·0	—	1·90	3·64	37·5	·09	1·81	2·22
74·4	—	—	4·77	56·4	—	—	3·99
17·5	—	·72	1·40	19·0	—	·45	1·03
10·5	1·17	4·97	1·21	7·1	2·05	3·36	·69
·4	—	—	·01	·1	—	—	—
·9	·18	—	·11	·4	—	—	·02
155·7	1·35	7·59	11·14	120·5	2·14	5·62	7·95
15·2	·63	2·62	1·25	8·3	·27	2·54	·59
24·3	—	1·26	·90	12·1	—	1·09	·64
9·4	—	1·17	·78	6·2	—	1·00	·40
1·6	—	—	·08	·4	—	·09	·01
31·2	·90	11·21	2·78	12·0	·55	6·72	·97
12·2	—	·09	1·04	19·1	—	—	1·86
·2	—	—	·01	·2	—	—	·01
92·2	1·08	2·09	4·80	65·9	1·27	2·18	3·85
120·8	·27	1·72	4·73	80·0	·45	4·63	3·05
105·9	—	—	5·83	87·5	—	—	4·73
8·4	—	—	·73	4·0	—	·18	·28
9·8	—	·54	·58	8·4	—	·27	·49
12·6	—	·18	·65	13·9	—	·09	·64
6·6	—	1·26	·48	5·6	·09	2·18	·41
19·4	—	—	·96	24·8	—	—	·96
120·8	—	·36	6·51	108·4	—	1·18	4·43
12·6	—	3·16	·86	11·6	—	4·72	·73
1·3	—	—	·03	·4	—	—	·03
·3	·18	·09	·01	·1	·36	—	·27
89·7	·27	·63	4·16	81·9	·36	1·18	3·52
—	—	—	—	—	—	—	—
·7	—	—	·08	1·9	—	—	·12
—	—	—		—	—	—	—
888·5	4·87	33·97	49·90	711·1	5·85	33·76	37·54

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT J.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the NORTH BRITISH DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 3,433. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	45	1	—	1·09
	Continued „	41	1	—	·76
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	52	—	—	1·51
	Cholera	—	—	—	—
	Other diseases	24	—	—	1·12
	Total	162	2	—	4·48
	Constitutional Group.				
	Rheumatism	147	1	6	6·10
	Primary Syphilis	193	—	—	12·46
	Secondary „	121	—	5	8·61
	Tubercular Diseases	47	9	25	6·55
	Scurvy and Purpura	—	—	—	—
	Other diseases	2	—	—	·11
	Total	510	10	36	33·83
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	45	2	9	3·24
2	Eye	57	—	1	6·51
3	Ear	7	—	—	·20
4	Nose	1	—	—	·30
5	Circulatory System	56	4	24	5·37
6	Absorbent „	36	—	—	2·70
7	Ductless Glands	—	—	—	—
8	Respiratory System	287	7	4	9·51
9	Digestive „	379	2	6	12·01
10	Urinary System — Gonorrhœa	332	—	—	16·73
	Urinary System — Sequelæ of Gonorrhœa	63	—	1	2·44
	Urinary System — Other diseases	58	2	3	2·13
11	Generative System	56	—	3	2·14
12	Organs of Locomotion	22	—	2	2·07
13	Cellular Tissue	101	—	—	3·57
14	Cutaneous System	439	—	—	12·04
	III.—*Debility*	59	—	13	4·12
	IV.—*Poisons*	6	—	—	·18
	V.—*Injuries.*				
1	General	—	3	—	—
2	Local	475	5	4	15·83
3	In action	—	—	—	—
	No appreciable disease	4	—	—	·13
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	3,155	37	106	139·53

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
13·1	·29	—	·32	3·6	—	—	·18
11·9	·29	—	·22	8·1	—	—	·41
—	—	—	—	—	—	—	—
15·2	—	—	·44	28·8	—	—	1·47
—	—	—	—	—	—	—	—
7·0	—	—	·33	4·2	—	—	·23
47·2	·58	—	1·31	44·7	—	—	2·29
42·8	·29	1·75	1·77	36·0	·30	1·79	1·84
56·2	—	—	3·63	55·5	—	—	2·83
35·2	—	1·46	2·51	35·1	·30	·59	1·79
18·7	2·62	7·28	1·91	13·2	1·50	5·69	·68
—	—	—	—	—	—	—	—
·6	—	—	·03	·6	—	—	·03
148·5	2·91	10·49	9·85	140·4	2·10	8·07	7·17
13·1	·58	2·62	·94	12·9	1·20	1·79	·66
16·6	—	·29	1·90	7·2	—	—	·36
2·0	—	—	·06	3·0	—	·29	·15
·3	—	—	·09	·3	—	—	·01
16·3	1·16	6·99	1·56	19·8	1·80	5·39	1·01
10·5	—	—	·79	15·0	—	—	·77
—	—	—	—	·6	—	—	·03
83·6	2·04	1·17	2·77	97·5	3·00	1·49	4·98
110·4	·58	1·75	3·50	90·0	·30	2·49	4·60
96·7	—	—	4·87	70·8	—	—	3·61
18·4	—	·29	·71	6·3	—	—	·32
16·9	·58	·88	·62	15·3	·60	·89	·78
16·3	—	·88	·62	13·2	—	·29	·68
6·4	—	·58	·60	4·2	—	1·29	·23
29·4	—	—	1·04	22·8	—	·39	1·15
127·9	—	—	3·51	115·4	—	—	5·90
17·2	—	3·79	1·20	6·9	—	·59	·35
1·7	—	—	·05	1·5	·30	—	·07
—	·88	—	—	—	—	—	—
138·4	1·46	1·17	4·61	115·1	·30	·29	5·89
—	—	—	—	—	—	—	—
1·2	—	—	·04	1·2	—	—	·09
—	—	—	—	—	—	—	—
919·0	10·77	30·90	40·64	804·1	9·60	23·26	41·10

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT K.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the CHANNEL ISLES during the Year 1880, with the Ratios per

Orders.	Average Strength, 1,343. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	2	—	—	·06
	Continued „	36	—	—	1·89
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	11	—	—	·20
	Cholera	—	—	—	—
	Other diseases	3	—	—	·05
	Total	52	—	—	2·20
	Constitutional Group.				
	Rheumatism	48	—	—	2·17
	Primary Syphilis	186	—	—	15·63
	Secondary „	19	—	—	1·52
	Tubercular Diseases	9	3	3	1·29
	Scurvy and Purpura	—	—	—	—
	Other diseases	14	—	—	·60
	Total	276	3	3	21·21
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	7	—	—	·34
2	Eye	28	—	—	1·55
3	Ear	4	—	—	·10
4	Nose	—	—	—	—
5	Circulatory System	16	1	1	·67
6	Absorbent „	53	—	—	5·12
7	Ductless Glands	—	—	—	—
8	Respiratory System	104	—	1	3·39
9	Digestive „	126	—	—	3·34
10	Urinary System — Gonorrhœa	207	—	—	10·29
	Urinary System — Sequelæ of Gonorrhœa	26	—	—	·99
	Urinary System — Other diseases	17	—	—	·46
11	Generative System	15	—	—	·51
12	Organs of Locomotion	7	—	—	·79
13	Cellular Tissue	29	—	—	·74
14	Cutaneous System	120	—	—	4·82
	III.—*Debility*	13	—	2	·88
	IV.—*Poisons*	7	—	—	·19
	V.—*Injuries.*				
1	General	—	—	—	—
2	Local	187	2	1	6·39
3	In action	—	—	—	—
	No appreciable disease	1	—	—	·10
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	1,295	6	8	64·08

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
1·5	—	—	·04	·8	—	—	·03
26·8	—	—	1·41	39·3	—	—	·61
—	—	—	—	—	—	—	—
8·2	—	—	·15	4·5	—	—	·07
—	—	—	—	—	—	—	—
2·2	—	—	·04	—	—	—	—
38·7	—	—	1·64	44·6	—	—	·71
35·7	—	—	1·61	34·0	—	—	1·78
138·5	—	—	11·64	89·9	—	—	4·98
14·2	—	—	1·13	36·2	—	—	1·99
6·7	2·22	2·22	·96	9·8	3·78	·75	1·40
—	—	—	—	—	—	—	—
10·4	—	—	·45	3·8	—	—	·22
205·5	2·22	2·22	15·79	173·7	3·78	·75	10·37
5·2	—	—	·25	9·8	—	3·78	·48
20·8	—	—	1·15	15·9	—	1·51	·71
3·0	—	—	·07	4·5	—	·75	·16
—	—	—	—	—	—	—	—
11·9	·75	·75	·50	15·1	—	3·78	·61
39·5	—	—	3·81	46·8	—	—	4·62
—	—	—	—	—	—	—	—
77·4	—	·75	2·53	86·1	—	—	2·66
93·8	—	—	2·49	126·1	—	1·51	2·85
154·1	—	—	7·66	162·4	—	—	6·31
19·4	—	—	.74	34·7	—	—	2·11
12·7	—	—	·34	16·6	—	—	·60
11·2	—	—	·38	9·8	—	—	·30
5·2	—	—	·59	4·5	—	·75	·71
21·6	—	—	·55	22·7	—	—	·61
89·4	—	—	3·59	169·2	—	—	4·61
9·7	—	1·48	·66	12·1	—	3·78	1·10
5·2	—	—	·14	6·8	·75	—	·11
—	—	—	—	—	·75	—	—
139·2	1·49	·75	4·76	174·5	---	1·51	5·85
—	—	—	—	—	—	—	—
·7	—	—	·07	·8	—	—	·04
—	—	—	—	—	—	—	—
964·2	4·46	5·95	47·71	1,136·7	5·28	18·12	45·52

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT L.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS, into HOSPITAL, the BELFAST DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 2,202. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	3	—	—	·31
	Continued „	39	1	—	1·35
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	14	—	—	·75
	Cholera	—	—	—	—
	Other diseases	21	—	—	·67
	Total	77	1	—	3·08
	Constitutional Group.				
	Rheumatism	75	—	1	2·91
	Primary Syphilis	342	—	—	21·20
	Secondary „	75	—	1	4·01
	Tubercular Diseases	21	6	6	2·50
	Scurvy and Purpura	—	—	—	—
	Other diseases	1	—	—	·02
	Total	514	6	8	30·64
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	29	—	6	2·92
2	Eye	35	—	2	1·20
3	Ear	8	—	2	·35
4	Nose	1	—	—	·13
5	Circulatory System	43	2	9	2·76
6	Absorbent „	50	—	—	2·35
7	Ductless Glands	—	—	—	—
8	Respiratory System	143	4	2	5·41
9	Digestive „	243	—	4	4·72
10	Urinary System — Gonorrhœa	256	—	—	11·10
	Urinary System — Sequelæ of Gonorrhœa	16	—	—	·40
	Urinary System — Other diseases	24	—	—	·87
11	Generative System	18	—	1	·87
12	Organs of Locomotion	12	—	2	·44
13	Cellular Tissue	53	—	—	2·52
14	Cutaneous System	326	—	—	12·80
	III.—*Debility*	82	—	5	1·74
	IV.—*Poisons*	11	—	—	·21
	V.—*Injuries.*				
1	General	1	—	—	·03
2	Local	277	1	—	7·90
3	In action	—	—	—	—
	No appreciable disease	2	—	—	·05
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	2,171	14	41	92·49

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
1·4	—	—	·14	3·7	·47	—	·27
17·7	·45	—	·61	21·5	·94	—	·54
—	—	—	—	—	—	—	—
6·3	—	—	·34	14·5	—	—	·20
—	—	—	—	—	—	—	—
9·5	—	—	·30	19·7	—	—	·62
34·9	·45	—	1·39	59·4	1·40	—	1·63
34·0	—	·45	1·32	51·0	—	3·28	2·53
155·4	—	—	9·63	90·3	—	—	6·01
34·0	—	·45	1·82	24·8	—	—	1·59
9·5	2·73	2·73	1·14	16·9	·94	3·74	1·30
—	—	—	—	—	—	—	—
·5	—	—	·01	·5	—	—	·01
233·4	2·73	3·63	13·92	183·5	·94	7·02	11·44
13·2	—	2·73	1·33	22·5	·47	2·81	1·15
15·9	—	·91	·54	15·9	—	1·40	·75
3·6	—	·91	·16	8·9	—	·94	·26
·5	—	—	·06	—	—	—	—
19·5	·91	4·09	1·25	21·5	1·87	4·21	·92
22·7	—	—	1·07	25·3	—	—	2·51
—	—	—	—	—	—	—	—
64·9	1·81	·91	2·46	118·4	1·40	3·28	5·32
110·4	—	1·81	2·14	109·6	·47	1·40	2·02
116·3	—	—	5·04	84·7	—	—	2·93
7·3	—	—	·18	6·6	—	—	·40
10·9	—	—	·40	11·7	—	·47	·83
8·2	—	·45	·40	18·7	—	1·40	·50
5·4	—	·91	·20	5·6	—	1·87	·38
24·1	—	—	1·14	27·2	—	—	·76
148·0	—	—	5·81	141·4	—	—	4·17
14·5	—	2·27	·79	15·5	—	6·09	·75
5·0	—	—	·10	2·8	—	2·81	·10
·5	—	—	·01	·9	—	—	·03
125·8	·45	—	3·59	105·4	—	—	3·28
—	—	—	—	—	—	—	—
·9	—	—	·02	2·3	—	—	·38
—	—	—	—	—	—	—	—
985·9	6·35	18·62	42·00	987·8	6·55	33·70	40·51

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT M.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, the DUBLIN DISTRICT during the Year 1880, with the Ratios

Orders.	Average Strength, 10,860. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive Fevers	34	—	—	1·60
	Continued „	160	4	—	7·05
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	59	—	1	1·58
	Cholera	—	—	—	—
	Other diseases	28	—	—	1·45
	Total	281	4	1	11·68
	Constitutional Group.				
	Rheumatism	308	1	6	16·32
	Primary Syphilis	1,605	—	—	126·52
	Secondary „	318	—	1	19·89
	Tubercular Diseases	88	13	28	10·39
	Scurvy and Purpura	4	—	—	·17
	Other diseases	6	—	—	·53
	Total	2,329	14	35	173·82
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	120	2	34	18·23
2	Eye	143	—	10	7·04
3	Ear	35	—	3	1·19
4	Nose	8	—	—	·37
5	Circulatory System	123	9	22	9·91
6	Absorbent „	134	—	1	9·49
7	Ductless Glands	—	—	—	—
8	Respiratory System	559	9	8	29·57
9	Digestive „	761	7	2	23·20
10	Urinary System — Gonorrhœa	1,203	—	—	71·90
	Urinary System — Sequelæ of Gonorrhœa	147	—	—	12·12
	Urinary System — Other diseases	192	5	6	8·99
11	Generative System	121	—	—	6·96
12	Organs of Locomotion	90	1	16	7·15
13	Cellular Tissue	240	—	2	10·78
14	Cutaneous System	1,316	—	2	52·36
	III.—*Debility*	69	—	8	5·12
	IV.—*Poisons*	25	1	—	·77
	V.—*Injuries.*				
1	General	—	2	—	—
2	Local	1,154	1	6	48·13
3	In action	—	—	—	—
	No appreciable disease	16	—	—	·75
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	9,066	55	156	509·53

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
3·1	—	—	·15	3·9	—	—	·22
14·7	·37	—	·65	19·5	·11	—	·87
—	—	—	—	—	—	—	—
5·4	—	·09	·15	4·8	—	—	·15
—	—	—	—	—	—	—	—
2·6	—	—	·13	2·7	—	—	·11
25·8	·37	·09	1·08	30·9	·11	—	1·35
28·4	·09	·55	1·50	32·4	·11	1·09	1·69
147·8	—	—	11·65	88·7	—	—	7·47
29·3	—	·09	1·83	31·0	—	·22	1·76
8·1	1·20	2·58	·96	8·4	2·63	1·97	1·18
·3	—	—	·02	·4	—	—	·03
·5	—	—	·05	·9	—	—	·12
214·4	1·29	3·22	16·01	161·8	2·74	3·28	12·25
11·1	·18	3·13	1·68	10·6	·43	2·63	1·12
13·2	—	·92	·65	16·2	—	·44	·77
3·2	—	·28	·11	4·6	—	·33	·33
·7	—	—	·03	·5	—	·11	·03
11·3	·83	2·03	·91	11·2	·22	1·75	1·13
12·3	—	·09	·87	20·8	—	·11	1·87
—	—	—	—	—	—	—	—
51·5	·83	·74	2·72	100·5	·87	1·09	5·48
70·1	·64	·18	2·14	89·2	·22	·66	2·52
110·8	—	—	6·62	77·5	—	—	4·25
13·5	—	—	1·12	9·2	—	·11	·81
17·7	·46	·55	·83	6·7	·11	·11	·36
11·1	—	—	·64	9·9	—	—	·58
8·3	·09	1·48	·66	5·8	—	1·42	·53
22·1	—	·18	·99	19·9	—	—	·77
121·2	—	·18	4·82	122·2	—	·22	4·35
6·4	—	·74	·47	9·0	—	1·42	·65
2·3	·09	—	·07	·4	—	—	·01
—	·18	—	—	—	·33	—	—
106·3	·09	·55	4·43	94·4	·11	·44	3·37
—	—	—	—	—	—	—	—
1·5	—	—	·07	2·4	—	—	·20
—	—	—	—	—	—	—	—
834·8	5·06	14·36	46·92	803·7	5·14	14·12	42·73

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT N.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into HOSPITAL, CORK DISTRICT during the Year 1880, with the Ratios per

Orders.	Average Strength, 5,801. Diseases.	Admissions into Hospital.	Deaths.	Invalids Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*				
	Febrile Group.				
	Eruptive fevers	28	1	—	1·48
	Continued „	195	9	—	6·50
	Yellow Fever	—	—	—	—
	Paroxysmal Fevers	62	—	—	1·70
	Cholera	—	—	—	—
	Other diseases	17	—	—	·98
	Total	302	10	—	10·66
	Constitutional Group.				
	Rheumatism	195	—	6	8·97
	Primary Syphilis	437	—	—	28·32
	Secondary „	96	—	1	6·11
	Tubercular Diseases	79	12	21	9·09
	Scurvy and Purpura	4	—	—	·06
	Other diseases	7	—	—	·29
	Total	818	12	28	52·84
	II.—*Local Diseases.*				
	Diseases of the—				
1	Nervous System	79	3	11	5·72
2	Eye	104	—	3	5·53
3	Ear	36	—	3	2·37
4	Nose	6	—	—	·20
5	Circulatory System	114	4	21	6·85
6	Absorbent „	41	—	1	1·97
7	Ductless Glands	2	—	—	·02
8	Respiratory System	346	6	3	12·08
9	Digestive „	667	2	3	21·70
10	Urinary System — Gonorrhœa	520	—	—	24·87
	Urinary System — Sequelæ of Gonorrhœa	49	—	—	3·69
	Urinary System — Other diseases	60	—	2	2·70
11	Generative System	69	—	—	3·66
12	Organs of Locomotion	38	2	2	3·24
13	Cellular Tissue	157	—	—	7·25
14	Cutaneous System	789	—	1	28·43
	III.—*Debility*	56	—	4	2·99
	IV.—*Poisons*	5	—	—	·07
	V.—*Injuries.*				
1	General	—	3	—	—
2	Local	709	3	5	24·43
3	In action	—	—	—	—
	No appreciable disease	16	—	—	·36
	Cause unknown (refers to deaths only)	—	—	—	—
	General total	4,983	45	87	221·63

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS stationed in 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.				Ratio per 1,000 for 1879.			
Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.	Admissions.	Deaths.	Invalids Discharged the Service.	Constantly Sick.
4·8	·17	—	·25	5·9	·33	—	·59
33·6	1·55	—	1·12	22·1	·65	—	1·40
—	—	—	—	—	—	—	—
10·7	—	—	·29	19·5	—	—	·54
—	—	—	—	—	—	—	—
2·9	—	—	·17	25·1	—	—	·66
52·0	1·72	—	1·83	72·6	·98	—	3·19
33·6	—	1·03	1·55	31·9	—	1·30	1·89
75·4	—	—	4·88	43·5	—	—	2·92
16·6	—	·17	1·05	18·7	·16	·16	1·13
13·6	2·07	3·62	1·57	9·8	1·63	4·56	·89
·6	—	—	·01	—	—	—	—
1·2	—	—	·05	1·6	—	—	·11
141·0	2·07	4·82	9·11	105·5	1·79	6·02	6·94
13·6	·52	1·90	·99	10·6	—	2·61	·64
17·9	—	·52	·95	18·9	—	1·30	·92
6·2	—	·52	·41	6·4	—	·33	·34
1·0	—	—	·03	·8	—	—	·02
19·7	·69	3·62	1·18	10·9	·33	2·44	1·00
7·1	—	·17	·34	12·4	—	—	·84
·8	—	—		—	—	—	—
59·6	1·03	·52	2·08	89·1	1·79	·33	3·23
115·0	·34	·52	3·74	110·1	·65	·49	3·20
89·6	—	—	4·29	61·2	—	—	2·76
8·4	—	—	·64	8·6	—	·33	·48
10·3	—	·34	·47	9·3	—	·16	·28
11·9	—	—	·63	9·0	—	·16	·45
6·6	·34	·34	·56	8·1	—	·98	·53
27·1	—	—	1·25	19·5	—	—	1·13
136·0	—	·17	4·90	147·6	—	·16	5·69
9·7	—	·69	·52	5·9	—	·81	·60
·9	—	—	·01	·5	—	—	·02
—	·52	—	—	·3	·65	—	·01
122·2	·52	·86	4·21	125·3	·16	·65	4·56
—	—	—	—	—	—	—	—
2·8	—	—	·06	6·8	—	—	·11
—	—	—	—	—	—	—	—
858·9	7·75		38·20	839·4	6·35	16·77	36·94

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. II.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed at GIBRALTAR during the year 1880, with the Ratios per

Orders.	Average Strength, 4,483. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	1	—	—	—	—	—	·21
	Continued „	595	5	—	5	6	—	34·49
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	11	—	—	—	3	6	·84
	Cholera	—	—	—	—	—	—	—
	Other Diseases	7	—	—	—	—	—	·12
	Total	614	5	—	5	9	6	35·66
	Constitutional Group.							
	Rheumatism	223	—	—	—	19	6	17·22
	Primary Syphilis	384	—	—	—	—	—	35·69
	Secondary „	30	—	—	—	—	2	1·71
	Tubercular diseases	24	2	—	2	15	10	1·79
	Scurvy and Purpura	3	—	—	—	—		·20
	Other Diseases	—	—	1	1	1	—	—
	Total	664	2	1	3	35	18	56·61
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	20	1	—	1	7	4	2·09
2	Eye	61	—	—	—	10	8	4·49
3	Ear	10	—	—	—	—	3	·32
4	Nose	6	—	—	—	—	—	·28
5	Circulatory System	31	2	1	3	20	15	3·10
6	Absorbent „	100	—	—	—	2	1	10·19
7	Ductless Glands	1	—	—	—	—	—	·02
8	Respiratory System	166	2	—	2	13	3	9·93
9	Digestive „	385	1	—	1	5	4	12·75
10	Urinary System — Gonorrhœa	337	—	—	—	—	—	20·21
	Urinary System — Sequelæ of Gonorr.	20	—	—	—	—	1	1·46
	Urinary System — Other diseases	42	1	—	1	3	—	1·59
11	Generative System	86	—	—	—	1	2	3·90
12	Organs of Locomotion	26	—	—	—	6	7	2·78
13	Cellular Tissue	124	—	—	—	3	1	6·38
14	Cutaneous System	168	—	—	—	2	2	7·21
	III.—*Debility*	59	—	—	—	36	4	4·30
	IV.—*Poisons*	18	—	—	—	—	—	·40
	V.—*Injuries.*							
1	General	—	—	—	—	—	—	—
2	Local	368	3	—	3	4	3	13·10
3	In action	—	—	—	—	—	—	—
	No appreciable disease	3	—	—	—	—	—	·07
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	3,309	17	2	19	156	82	196·84
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
·2	—	—	—	·05	1·1	—	—	—	·17
132·7	1·12	1·34	—	7·69	95·7	·89	2·21	—	4·89
—	—	—	—	—	—	—	—	—	—
2·5	—	·67	1·34	·19	292·3	3·32	34·10	—	10·63
—	—	—	—	—	—	—	—	—	—
1·6	—	—	—	·03	1·1	—	—	—	·10
137·0	1·12	2·01	1·34	7·96	390·2	4·21	36·31	—	15·79
49·7	—	4·24	1·34	3·84	55·4	—	7·53	1·33	4·67
85·7	—	—	—	7·96	31·4	—	—	—	3·33
6·7	—	—	·45	·38	7·8	—	·22	·44	·49
5·8	·45	3·35	2·23	·40	6·4	1·33	4·87	4·43	·93
·7	—	—	—	·05	·7	—	—	—	·05
—	·22	·22	—	—	1·3	·22	—	—	·26
148·1	·67	7·81	4·02	12·63	103·0	1·55	12·62	6·20	9·73
4·5	·22	1·56	·89	·47	4·4	·44	·66	·22	·49
13·6	—	2·23	1·78	1·00	11·9	—	2·44	1·33	1·15
2·2	—	—	·67	·07	6·2	—	·66	·22	·31
1·3	—	—	—	·06	·7	—	—	—	·03
6·9	·67	4·46	3·35	·69	8·0	1·11	2·66	1·77	·47
22·3	—	·45	·22	2·27	31·9	—	·66	—	2·94
·2	—	—	—	} 2·22 {	—	—	—	—	—
37·0	·45	2·89	·67		38·8	1·77	5·31	1·55	3·56
85·9	·22	1·12	·89	2·84	67·5	—	3·54	3·32	4·04
75·2	—	—	—	4·51	36·5	—	—	—	1·57
4·5	—	—	·22	·33	9·1	—	—	—	·56
9·3	·22	·67	—	·35	2·4	·22	—	—	·39
19·2	—	·22	·45	·87	10·2	—	—	—	1·43
5·8	—	1·34	1·56	·62	4·9	—	·89	1·11	·21
27·6	—	·67	·22	1·42	23·7	—	·22	·44	1·14
37·5	—	·45	·45	1·61	33·2	—	·22	—	1·39
13·2	—	8·03	·89	·96	16·2	—	6·20	4·87	·98
4·0	—	—	—	·09	14·4	—	—	—	·46
—	—	—	—	—	—	·44	—	—	—
82·1	·67	·89	·67	2·92	72·6	·22	1·77	1·55	3·19
—	—	—	—	—	—	—	—	—	—
·7	—	—	—	·02	·4	—	—	—	·03
—	—	—	—	—	—	—			—
738·1	4·24	34·80	18·29	43·91	886·2	9·96	74·16	22·58	49·86
669·4	6·98	32·80	17·41	35·88	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. III.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed at MALTA during the year 1880, with the Ratios per

Orders.	Average Strength, 4,885. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	17	1	—	1	—	—	·84
	Continued „	900	18	—	18	—	—	38·37
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	60	2	—	2	1	2	3·48
	Cholera	—	—	—	—	—	—	—
	Other Diseases	41	—	—	—	—	—	1·88
	Total	1,018	21	—	21	1	2	44·52
	Constitutional Group.							
	Rheumatism	163	—	—	—	5	4	12·11
	Primary Syphilis	108	—	—	—	—	—	9·90
	Secondary „	64	—	—	—	1	2	4·46
	Tubercular diseases	38	7	1	8	7	7	7·64
	Scurvy and Purpura	—	—		—	—	—	—
	Other Diseases	1	—	1	1	—	1	·05
	Total	374	7	2	9	18	14	34·16
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	53	3	—	3	15	—	7·34
2	Eye	125	—	—	—	9	7	8·90
3	Ear	29	—	—	—	1	2	1·28
4	Nose	4	—	—	—	—	—	·15
5	Circulatory System	40	4	1	5	8	11	3·82
6	Absorbent „	16	—	—	—	—	—	·52
7	Ductless glands	2	—	—	—	—	—	·19
8	Respiratory System	222	1	—	1	13	5	18·03
9	Digestive „	732	3	—	3	6	3	23·45
10	Urinary System — Gonorrhœa	358	—	—	—	—	—	13·62
	Urinary System — Sequelæ of Gonorr.	42	—	—	—	1	1	2·41
	Urinary System — Other diseases	35	—	—	—	—	—	1·48
11	Generative System	54	—	—	—	1	2	4·57
12	Organs of Locomotion	41	—	—	—	2	1	5·28
13	Cellular Tissue	137	—	—	—	3	—	5·12
14	Cutaneous System	370	—	—	—	3	—	21·41
	III.—*Debility*	95	1	—	1	12	7	10·49
	IV.—*Poisons*	2	—	—	—	—	—	·03
	V.—*Injuries.*							
1	General	2	1	—	1	—	—	·11
2	Local	431	5	—	5	—	3	20·40
3	In action	—	—	—	—	—	—	—
	No appreciable disease	5	—	—	—	—	—	·22
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	4,187	46	3	49	88	58	227·45
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
3·5	·20	—	—	·17	1·1	—	·43	—	·09
184·2	3·69	—	—	7·86	209·5	2·57	—	—	8·98
—	—	—	—	—	—	—	—	—	—
12·3	·41	·20	·41	·70	2·3	—	—	·21	·10
—	—	—	—	—	—	—	—	—	—
8·4	—	—	—	·38	7·5	—	—	—	·33
208·4	4·30	·20	·41	9·11	220·4	2·57	·43	·21	9·50
33·4	—	1·02	·82	2·48	37·1	·43	2·57	·86	2·64
22·1	—	—	—	2·03	37·5	—	—	—	2·52
13·1	—	·20	·41	·91	6·0	—	·64	·21	·73
7·8	1·64	1·43	1·43	1·56	4·7	1·29	1·50	1·50	·67
—	—	—	—	—	—	—	—	—	·06
·2	·20	—	·20	·01	3·6	—	·64	·21	·34
76·6	1·84	2·66	2·87	6·99	88·9	1·72	5·35	2·78	6·96
10·9	·62	3·07	—	1·50	13·7	·21	4·07	1·29	·89
25·6	—	1·84	1·43	1·82	20·1	—	2·14	1·50	1·29
5·9	—	·20	·41	·26	6·4	—	1·29	1·07	·56
·8	—	—	—	·03	1·9	—	—	—	·11
8·2	1·02	1·64	2·25	·78	15·0	1·07	4·50	2·36	1·42
3·3	—	—	—	·11	4·9	—	—	—	·25
·4	—	—	—	·04	·4	—	—	—	·03
45·4	·20	2·66	1·02	3·69	40·3	1·07	2·57	·86	3·07
149·9	·62	1·23	·62	4·80	166·0	·43	1·93	·64	5·76
73·3	—	—	—	2·79	38·6	—	—	—	2·01
8·6	—	·20	·20	·49	9·2	—	·21	·43	·61
7·2	—	—	—	·29	3·7	—	·21	·21	·28
11·1	—	·20	·41	·94	11·8	—	—	—	·66
8·4	—	·41	·20	1·08	6·7	—	·86	·43	·45
28·0	—	·62	—	1·05	26·8	—	—	—	1·52
75·7	—	·62	—	4·38	61·9	—	1·50	—	4·03
19·4	·20	2·46	1·43	2·15	21·0	—	7·50	2·14	1·64
·4	—	—	—	·01	1·7	—	—	—	·04
·4	·20	—	—	·02	1·9	1·07	—	—	·10
88·2	1·02	—	·62	4·18	110·8	·21	·64	·43	5·30
—	—	—	—	—	—	—	—	—	—
1·0	—	—	—	·05	·4	—	—	—	—
—	—	—	—	—	—	—	—	—	—
857·1	10·02	18·01	11·87	46·56	872·5	8·35	33·20	14·35	46·48
837·8	9·77	30·00	17·89	42·35	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. IIIa.—Table showing the Average Strength, Admissions into of the Royal Malta Fencible Artillery during the Year 1880, with

Orders.	Average Strength, 847. Diseases	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number Constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	3	—	—	—	—	—	·14
	Continued „	26	—	—	—	—	—	·72
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	2	—	—	—	—	—	·19
	Cholera	—	—	—	—	—	—	—
	Other diseases	1	—	—	—	—	—	·02
	Total	32	—	—	—	—	—	1·07
	Constitutional Group.							
	Rheumatism	4	—	—	—	—	—	·06
	Primary Syphilis	3	—	—	—	—	—	·21
	Secondary „	1	—	—	—	—	—	·06
	Tubercular diseases	1	1	—	1	—	—	·13
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other diseases	1	—	—	—	—	—	·05
	Total	10	1	—	1	—	—	·51
	II.—*Local Diseases.* Diseases of the—							
1	Nervous System	1	—	—	—	—	1	·18
2	Eye	5	—	—	—	—	2	·08
3	Ear	1	—	—	—	—	—	·02
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	4	—	—	—	—	—	·36
6	Absorbent „	1	—	—	—	—	—	·08
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	20	—	—	—	—	—	1·20
9	Digestive „	26	—	—	—	—	2	·89
10	Urinary System — Gonorrhœa	15	—	—	—	—	—	·87
	Urinary System — Sequelæ of Gonorr.	1	—	—	—	—	—	·02
	Urinary System — Other diseases	1	—	—	—	—	—	·02
11	Generative System	2	—	—	—	—	—	·03
12	Organs of Locomotion	1	—	—	—	—	—	·06
13	Cellular Tissue	1	—	—	—	—	—	·01
14	Cutaneous System	33	—	—	—	—	1	1·07
	III.—*Debility*	4	—	—	—	—	2	·05
	IV.—*Poisons*	—	—	—	—	—	—	—
	V.—*Injuries.*							
1	General	—	1	—	1	—	—	—
2	Local	35	—	—	—	—	—	·78
3	In action	—	—	—	—	—	—	—
	No appreciable disease	—	—	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	193	2	—	2	—	8	7·30
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
8·6	—	—	—	·40	—	—	—	—	—
74·9	—	—	—	2·07	92·2	—	—	—	2·65
—	—	—	—	—	—	—	—	—	—
5·8	—	—	—	·55	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
2·9	—	—	—	·06	—	—	—	—	—
92·2	—	—	—	3·08	92·2	—	—	—	2·65
11·5	—	—	—	·17	17·3	—	—	8·65	·55
8·6	—	—	—	·61	11·5	—	—	—	·66
2·9	—	—	—	·17	23·0	—	—	—	1·64
2·9	2·88	—	—	·38	17·3	2·88	—	2·88	1·82
—	—	—	—	—	—	—	—	—	—
2·9	—	—	—	·14	2·9	—	—	—	·14
28·8	2·88	—	—	1·47	72·0	2·88	—	11·53	4·81
2·9	—	—	2·88	·52	2·9	—	—	2·88	·86
14·4	—	—	5·76	·23	28·8	—	—	5·76	·61
2·9	—	—	—	·06	2·9	—	—	—	·03
—	—	—	—	—	—	—	—	—	—
11·5	—	—	—	1·04	2·9	2·88	—	14·41	·09
2·9	—	—	—	·23	2·9	—	—	—	·03
—	—	—	—	—	—	—	—	—	—
57·6	—	—	—	3·46	49·0	—	—	2·88	1·27
74·9	—	—	5·76	2·56	57·6	—	—	2·88	1·64
43·2	—	—	—	2·51	28·8	—	—	—	1·09
2·9	—	—	—	·06	—	—	—	—	·17
2·9	—	—	—	·06	—	—	—	—	—
5·8	—	—	—	·09	5·8	—	—	—	·09
2·9	—	—	—	·17	—	—	—	—	—
2·9	—	—	—	·03	8·6	—	—	—	·49
95·1	—	—	2·88	3·08	83·5	—	—	2·88	2·71
11·5	—	—	5·76	·14	25·9	—	—	2·88	1·70
—	—	—	—	—	—	—	—	—	—
—	2·88	—	—	—	—	—	—	—	—
100·9	—	—	—	2·25	129·7	—	—	—	3·26
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
556·2	5·76	—	23·05	21·04	593·5	5·76	—	46·10	21·50
745·7	5·74	—	46·10	21·50	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. IV.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed at CYPRUS during the Year 1880, with the Ratios per

Orders.	Average Strength, 443. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number Constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	—	—	—	—	—	—	—
	Continued „	10	—	—	—	—	—	·16
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	87	—	—	—	—	—	2·38
	Cholera	—	—	—	—	—	—	—
	Other diseases	—	—	—	—	—	—	—
	Total	97	—	—	—	—	—	2·54
	Constitutional Group.							
	Rheumatism	13	—	—	—	1	—	·92
	Primary Syphilis	59	—	—	—	—	—	4·14
	Secondary „	60	—	—	—	2	1	4·42
	Tubercular diseases	2	—	—	—	—	—	·06
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other diseases	—	—	—	—	—	—	—
	Total	134	—	—	—	3	1	9·54
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	1	—	—	—	1	1	·23
2	Eye	3	—	—	—	—	—	·10
3	Ear	2	—	—	—	—	—	·14
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	4	—	—	—	1	2	·22
6	Absorbent „	1	—	—	—	—	—	·03
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	15	1	—	1	—	—	·55
9	Digestive „	43	—	—	—	1	—	1·55
10	Urinary System — Gonorrhœa	45	—	—	—	—	—	3·36
	Urinary System — Sequelæ of Gonorr.	6	—	—	—	—	—	·79
	Urinary System — Other diseases	1	—	—	—	—	—	·01
11	Generative System	2	—	—	—	—	—	·13
12	Organs of Locomotion	—	—	—	—	—	—	—
13	Cellular Tissue	10	—	—	—	1	1	·68
14	Cutaneous System	25	—	—	—	—	—	1·45
	III.—*Debility*	3	—	—	—	—	—	·31
	IV.—*Poisons*	3	—	—	—	—	—	·10
	V.—*Injuries.*							
1	General	—	—	—	—	—	—	—
2	Local	48	—	—	—	1	1	1·84
3	In action	—	—	—	—	—	—	—
	No appreciable disease	1	—	—	—	—	—	·03
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	444	1	—	1	8	6	23·60
	Average for 1878–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
—	—	—	—	—	—	—	—	—	—
22·6	—	—	—	·36	57·6	—	—	—	1·47
—	—	—	—	—	—	—	—	—	—
196·4	—	—	—	5·37	521·2	10·61	16·67	6·06	15·29
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
219·0	—	—	—	5·73	578·8	10·61	16·67	6·06	16·76
29·4	—	2·26	—	2·08	37·9	—	—	1·51	2·15
133·2	—	—	—	9·35	36·4	—	—	—	2·21
185·4	—	4·51	2·26	9·98	25·8	—	—	—	1·81
4·5	—	—	—	·13	3·0	—	—	7·57	·39
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	3·0	—	1·51	—	·74
302·5	—	6·77	2·26	21·54	106·1	—	1·51	9·08	7·30
2·2	—	2·26	2·26	·52	19·7	—	—	—	·49
6·8	—	—	—	·23	63·6	—	3·03	3·03	1·50
4·5	—	—	—	·32	3·0	—	—	—	·12
—	—	—	—	—	—	—	—	—	—
9·0	—	2·26	4·51	·50	9·1	—	1·51	4·55	·52
2·2	—	—	—	·07	6·1	—	—	—	·36
—	—	—	—	—	—	—	—	—	—
33·9	2·26	—	—	1·24	39·4	—	3·03	3·03	·86
97·1	—	2·26	—	3·50	274·2	6·06	1·51	6·06	9·20
101·6	—	—	—	7·58	59·1	—	—	—	3·23
13·5	—	—	—	1·78	7·6	—	—	—	·76
2·2	—	—	—	·02	3·0	1·51	—	1·51	·15
4·5	—	—	—	·29	9·1	—	—	—	·24
—	—	—	—	—	10·6	—	1·51	1·51	·15
2.6	—	2·26	2·26	1·53	30·3	—	1·51	—	1·68
·4	—	—	—	3·27	80·3	—	3·03	—	2·33
6·8	—	—	—	·70	18·2	—	4·55	21·21	1·41
6·8	—	—	—	·23	13·6	—	—	—	·30
—	—	—	—	—	—	1·51	—	—	—
108·4	—	2·26	2·26	4·15	137·9	1·51	—	3·03	6·73
—	—	—	—	—	—	—	—	—	—
2·2	—	—	—	·07	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
1002·2	2·26	18·07	13·55	53·27	1469·7	21·20	37·86	59·07	54·09
3153·7	32·18	102·96	37·32	150·58	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. V.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed in CANADA during the Year 1880, with the Ratios per

Orders.	Average Strength, 1,670. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	—	—	—	—	—	—	—
	Continued „	19	1	—	1	—	—	·74
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	11	—	—	—	—	—	·34
	Cholera	—	—	—	—	—	—	—
	Other Diseases	6	—	—	—	—	—	·14
	Total	36	1	—	1	—	—	1·22
	Constitutional Group.							
	Rheumatism	94	1	—	1	3	1	8·34
	Primary Syphilis	160	—	—	—	—	—	15·24
	Secondary „	87	—	—	—	2	2	6·83
	Tubercular diseases	15	4	—	4	9	7	2·07
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	3	—	—	—	1	—	·24
	Total	359	5	—	5	15	10	32·72
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	21	1	—	1	9	1	2·27
2	Eye	20	—	—	—	3	1	1·60
3	Ear	7	—	—	—	1	2	·41
4	Nose	1	—	—	—	—	—	·01
5	Circulatory System	33	1	—	1	13	10	2·23
6	Absorbent „	57	—	—	—	—	—	4·72
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	126	—	—	—	7	3	3·84
9	Digestive „	217	1	—	1	1	2	4·86
10	Urinary System — Gonorrhœa	149	—	—	—	—	—	8·18
	Urinary System — Sequelæ of Gonorr.	24	—	—	—	—	—	1·24
	Urinary System — Other diseases	29	—	—	—	3	1	1·09
11	Generative System	20	—	—	—	1	—	1·09
12	Organs of Locomotion	6	—	—	—	4	2	·85
13	Cellular Tissue	23	—	—	—	1	—	·62
14	Cutaneous System	68	—	—	—	1	1	2·31
	III.—*Debility*	3	—	—	—	1	4	·19
	IV.—*Poisons*	41	—	—	—	—	—	1·37
	V.—*Injuries.*							
1	General	—	2	—	2	—	—	—
2	Local	191	—	—	—	—	—	7·09
3	In action	—	—	—	—	—	—	—
	No appreciable disease	3	—	—	—	—	—	·05
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	1,434	11	—	11	60	37	77·96
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
—	—	—	—	—	—	—	—	—	—
11·4	·60	—	—	·45	3·5	—	—	—	·12
—	—	—	—	—	—	—	—	—	—
6·6	—	—	—	·20	255·1	—	16·19	—	6·74
—	—	—	—	—	—	—	—	—	—
3·6	—	—	—	·08	4·6	—	—	—	·17
21·6	·60	—	—	·73	263·2	—	16·19	—	7·03
56·3	·60	1·80	·60	4·99	24·9	—	2·31	·58	2·62
95·8	—	—	—	9·13	93·7	—	—	—	7·71
52·1	—	1·20	1·20	4·09	38·7	—	—	·58	2·97
9·0	2·39	5·38	4·19	1·24	5·8	1·15	2·31	2·88	1·06
—	—	—	—	—	—	—	—	—	—
1·8	—	·60	—	·14	1·2	·58	—	·58	·07
215·0	2·99	8·98	5·99	19·59	164·3	1·73	4·62	4·62	14·43
12·6	·60	5·39	·60	1·86	6·9	—	1·15	·58	1·05
12·0	—	1·80	·60	·96	12·7	—	·58	1·15	·54
4·2	—	·60	1·20	·25	3·5	—	—	—	·25
·6	—	—	—	·01	—	—	—	—	—
19·7	·60	7·78	5·99	1·34	16·2	·58	4·05	2·31	1·06
34·1	—	—	—	2·83	30·7	—	—	—	2·56
—	—	—	—	—	—	—	—	—	—
75·4	—	4·19	1·80	2·30	56·1	1·15	1·15	—	1·54
129·9	·60	·60	1·20	2·91	120·3	—	·58	·58	3·63
89·2	—	—	—	4·90	68·8	—	—	—	3·20
14·4	—	—	—	·74	9·2	—	—	·58	·59
17·4	—	1·80	·60	·65	18·5	—	—	·58	·94
12·0	—	·60	—	·65	10·4	—	—	·58	·90
3·6	—	2·39	1·20	·51	1·2	—	·58	·58	·03
13·8	—	·60	—	·37	11·6	—	—	—	·46
40·7	—	·60	·60	1·38	42·8	—	—	—	1·52
1·8	—	·60	2·39	·11	10·4	—	3·47	1·73	1·17
24·5	—	—	—	·82	15·6	—	—	—	·52
—	1·20	—	—	—	—	1·15	—	—	—
114·4	—	—	—	4·24	116·2	—	·58	·58	4·13
—	—	—	—	—	—	—	—	—	—
1·8	—	—	—	·03	5·2	—	—	—	·15
—	—	—	—	—	—	—	—	—	—
858·7	6·59	35·93	22·16	46·68	983·8	4·62	32·95	13·87	45·70
650·0	7·08	20·22	13·73	28·24	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. VI.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into TROOPS stationed in BERMUDA during the Year 1880, with the Ratios

Orders.	Average Strength, 1,974. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I. *General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	1	—	—	—	—	—	·08
	Continued „	84	6	—	6	—	—	6·58
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	7	—	—	—	—	—	·39
	Cholera	—	—	—	—	—	—	—
	Other diseases	3	—	—	—	—	—	·11
	Total	95	6	—	6	—	—	7·16
	Constitutional Group.							
	Rheumatism	59	—	—	—	1	1	2·88
	Primary Syphilis	65	—	—	—	—	—	6·43
	Secondary „	17	—	—	—	—	—	1·64
	Tubercular diseases	19	2	3	5	14	6	3·37
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other diseases	5	1	—	1	—	—	·23
	Total	165	3	3	6	15	7	14·55
	II. *Local Diseases.* Diseases of the—							
1	Nervous System	31	2	—	2	7	1	2·86
2	Eye	17	—	—	—	4	2	·99
3	Ear	18	—	—	—	1	—	·66
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	31	—	—	—	11	2	4·95
6	Absorbent „	36	—	—	—	—	—	5·17
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	61	—	—	—	2	1	3·98
9	Digestive „	319	2	—	2	3	1	9·59
10	Urinary System — Gonorrhœa	45	—	—	—	—	—	3·09
	Urinary System — Sequelæ of Gonorr.	5	—	—	—	1	—	·44
	Urinary System — Other diseases	13	—	—	—	3	1	1·18
11	Generative System	22	—	—	—	1	—	1·04
12	Organs of Locomotion	6	—	—	—	1	1	·51
13	Cellular Tissue	47	—	—	—	—	—	1·42
14	Cutaneous System	157	—	—	—	3	1	7·66
	III.—*Debility.*	20	—	—	—	5	4	2·19
	IV.—*Poisons*	29	1	—	1	—	—	1·72
	V.—*Injuries.*							
1	General	—	2	—	2	—	—	—
2	Local	257	—	—	—	2	1	10·09
3	In action	—	—	—	—	—	—	—
	No appreciable disease	—	—	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	1,374	16	3	19	59	22	79·25
	Average for 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
·5	—	—	—	·04	—	—	—	—	·06
42·6	3·04	—	—	3·33	31·5	1·01	—	—	1·61
—	—	—	—	—	—	—	—	—	—
3·5	—	—	—	·20	—	—	—	—	—
—	—	—	—	—	·5	·51	—	—	·01
1·5	—	—	—	·06	3·5	—	—	—	·38
48·1	3·04	—	—	3·63	35·5	1·52	—	—	2·06
29·9	—	·51	·51	1·46	21·3	—	·51	1·01	1·34
32·9	—	—	—	3·25	33·0	—	—	—	3·06
8·6	—	—	—	·83	10·7	—	—	1·01	·56
9·6	2·53	7·09	3·04	1·71	6·6	—	·51	3·05	1·71
—	—	—	—	—	·5	—	—	—	·06
2·6	·51	—	—	·11	1·0	—	·51	·51	·14
83·6	3·04	7·60	3·55	7·36	73·1	—	1·52	5·58	6·87
15·7	1·01	3·55	·51	1·45	8·1	·51	—	1·01	·67
8·6	—	2·02	1·01	·50	13·7	—	·51	1·52	·96
9·1	—	·51	—	·33	7·6	—	·51	·51	·63
—	—	—	—	—	—	—	—	—	—
15·7	—	5·57	1·01	2·51	11·2	·51	1·01	3·55	·99
18·2	—	—	—	2·62	31·0	—	·51	—	2·98
—	—	—	—	—	—	—	—	—	—
30·9	—	1·01	·51	2·02	37·6	—	1·52	·51	1·92
161·6	1·01	1·52	·51	4·86	112·7	·51	1·52	1·52	3·88
22·8	—	—	—	1·57	24·9	—	—	—	1·49
2·6	—	·51	—	·22	5·6	—	·51	—	1·06
6·6	—	1·52	·51	·60	10·1	—	—	—	·89
11·2	—	·51	—	·53	8·6	—	—	—	·43
3·0	—	·51	·51	·26	2·5	—	—	·51	·10
23·8	—	—	—	·72	22·3	—	—	—	·75
79·5	—	1·52	·51	3·88	55·8	—	·51	·51	1·99
10·1	—	2·53	2·02	1·11	18·8	—	1·01	5·08	1·51
14·7	·51	—	—	·87	7·6	·51	—	—	·32
—	1·01	—	—	—	—	1·01	—	—	—
130·2	—	1·01	·51	5·11	109·7	·51	·51	1·01	4·62
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
696·0	9·62	29·89	11·15	40·15	596·4	5·08	9·64	21·31	34·12
637·1	8·96	20·45	13·07	32·62	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. VII.—TABLE showing the AVERAGE STRENGTH, the ADMISSIONS into TROOPS stationed in the WEST INDIES, during the year 1880, with the

Orders.	Average Strength, 1,037. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number Constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	—	—	—	—	—	—	—
	Continued „	150	—	—	—	—	—	3·46
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	67	2	—	2	—	—	2·42
	Cholera	—	—	—	—	—	—	—
	Other Diseases	1	—	—	—	—	—	·03
	Total	218	2	—	2	—	—	5·91
	Constitutional Group.							
	Rheumatism	31	—	—	—	3	2	1·49
	Primary Syphilis	39	—	—	—	—	—	2·27
	Secondary „	4	—	—	—	1	—	·57
	Tubercular Diseases	9	—	—	—	10	2	1·66
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	1	—	—	—	—	—	·09
	Total	84	—	—	—	14	4	6·08
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	17	—	—	—	5	1	1·59
2	Eye	7	—	—	—	3	1	·55
3	Ear	15	—	—	—	1	1	·80
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	13	1	—	1	4	1	1·00
6	Absorbent „	17	—	—	—	—	—	1·63
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	40	1	—	1	1	1	1·81
9	Digestive „	135	1	—	1	3	—	4·78
10	Urinary System — Gonorrhœa	64	—	—	—	—	—	3·32
	Urinary System — Sequelæ of Gonorr.	8	—	—	—	—	—	·41
	Urinary System — Other Diseases	19	—	—	—	—	—	·62
11	Generative System	25	—	—	—	—	—	1·01
12	Organs of Locomotion	19	—	—	—	4	1	2·04
13	Cellular Tissue	20	—	—	—	—	—	1·24
14	Cutaneous System	69	—	—	—	1	1	2·34
	III.—*Debility*	31	—	—	—	6	2	2·34
	IV.—*Poisons.*	11	1	—	1	—	—	·32
	V.—*Injuries.*							
1	General	1	2	—	2	1	—	·40
2	Local	139	1	—	1	1	—	6·28
3	In action	—	—	—	—	—	—	—
	No appreciable disease	—	—	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	952	9	—	9	44	13	44·47
	Average for 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED, and CONSTANTLY SICK among the WHITE Ratios per 1,000 of the Strength, and the Average Ratios for 10 years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
—	—	—	—	—	—	—	—	—	—
144·6	—	—	—	3·34	123·4	1·87	—	—	3·64
—	—	—	—	—	—	—	—	—	—
64·6	1·92	—	—	2·33	18·7	·93	3·74	—	2·77
—	—	—	—	—	—	—	—	—	—
1·0	—	—	—	·03	·9	—	—	—	·02
210·2	1·92	—	—	5·70	143·0	2·80	3·74	—	6·43
29·9	—	2·89	1·92	1·44	45·7	—	—	—	2·04
37·6	—	—	—	2·19	17·8	—	—	—	·61
3·9	—	·97	—	·55	7·5	—	·93	—	·27
8·7	—	9·64	1·92	1·60	7·5	·93	2·80	·93	2·11
—	—	—	—	—	—	—	—	—	—
·9	—	—	—	·08	·9	—	—	—	—
81·0	—	13·50	3·85	5·86	79·4	·93	3·74	·93	5·03
16·4	—	4·82	·97	1·53	15·9	1·87	9·35	3·74	2·29
6·7	—	2·89	·97	·53	8·4	—	1·87	1·87	·97
14·5	—	·97	·97	·77	9·3	—	1·87	1·87	·38
—	—	—	—	—	—	—	—	—	—
12·5	·97	3·85	·97	·97	4·7	—	·93	·93	·20
16·4	—	—	—	1·57	22·4	—	—	—	1·30
—	—	—	—	—	—	—	—	—	—
38·6	·97	·97	·97	1·74	17·8	·93	—	—	2·09
130·2	·97	2·89	—	4·61	88·8	1·87	·93	·93	3·56
61·7	—	—	—	3·20	28·0	—	—	—	1·11
7·7	—	—	—	·39	7·5	—	—	—	·89
18·3	—	—	—	·60	10·3	—	—	—	·14
24·1	—	—	—	·97	11·2	—	—	—	·37
18·3	—	3·85	·97	1·97	8·4	—	—	—	·76
19·3	—	—	—	1·19	20·6	—	—	—	·48
66·6	—	·97	·97	2·26	55·1	—	·93	·93	2·10
29·9	—	5·78	1·92	2 26	13·1	—	3·74	3·74	1·63
10·6	·97	—	—	·31	1·9	—	—	—	—
1·0	1·92	·97	—	·39	—	—	—	—	—
134·0	·97	·97	—	6·06	95·3	1·87	—	—	2·90
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
918·0	8·68	42·43	12·54	42·88	641·1	10·27	27·10	14·94	32·63
895·0	10·99	20·03	12·00	41·32	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. VIII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into TROOPS stationed in the WEST INDIES, during the year 1880, with the

Orders.	Average Strength, 1,092. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	2	—	—	—	—	—	·13
	Continued „	46	—	—	—	—	—	1·65
	Yellow Fever	1	1	—	1	—	—	·01
	Paroxysmal Fevers	235	3	—	3	—	—	6·07
	Cholera	—	—	—	—	—	—	—
	Other diseases	3	—	—	—	—	—	·09
	Total	287	4	—	4	—	—	7·95
	Constitutional Group.							
	Rheumatism	89	—	—	—	—	7	4·24
	Primary Syphilis	112	—	—	—	—	—	8·58
	Secondary „	31	—	—	—	—	7	3·81
	Tubercular Diseases	16	10	—	10	—	9	3·20
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other diseases	3	—	—	—	—	2	·50
	Total	251	10	—	10	—	25	20·33
	II. *Local Diseases.*							
	Diseases of the—							
1	Nervous System	16	—	—	—	—	4	1·72
2	Eye	13	—	—	—	—	—	·62
3	Ear	1	—	—	—	—	—	·23
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	15	1	—	1	—	4	1·09
6	Absorbent „	26	—	—	—	—	—	1·75
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	61	1	—	1	—	—	2·85
9	Digestive „	105	3	—	3	—	1	8·43
10	Urinary System — Gonorrhœa	105	—	—	—	—	—	6·41
	Urinary System — Sequelæ of Gonorr.	25	—	—	—	—	—	1·27
	Urinary System — Other diseases	6	1	—	1	—	—	·18
11	Generative System	45	—	—	—	—	—	4·06
12	Organs of Locomotion	11	—	—	—	—	—	·99
13	Cellular Tissue	19	—	—	—	—	1	1·05
14	Cutaneous System	81	—	—	—	—	—	3·02
	III.—*Debility*	19	1	—	1	—	4	2·56
	IV.—*Poisons*	1	—	—	—	—	—	·02
	V.—*Injuries.*							
1	General	—	—	—	—	—	—	—
2	Local	104	—	—	—	—	1	5·82
3	In action	—	—	—	—	—	—	—
	No appreciable disease	—	—	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	1,191	21	—	21	—	40	70·28
	Average for 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 187

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the BLACK Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000, for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
1·8	—	—	—	·12	—	—	—	—	·05
42·1	—	—	—	1·51	145·0	—	—	—	4·98
·9	·92	—	—	·01	—	—	—	—	—
215·2	2·74	—	—	5·56	90·5	—	—	·88	2·23
—	—	—	—	—	—	—	—	—	—
2·8	—	—	—	·08	·9	—	—	—	—
262·8	3·66	—	—	7·28	236·4	—	—	·88	7·26
81·5	—	—	6·41	3·88	58·9	—	—	·88	2·51
102·6	—	—	—	7·86	137·9	—	—	—	9·13
28·4	—	—	6·41	3·49	36·9	—	—	2·63	3·69
14·6	9·15	—	8·24	2·93	13·2	3·51	—	6·15	1·55
—	—	—	—	—	—	—	—	—	—
2·8	—	—	1·83	·46	3·5	—	—	—	·12
229·9	9·15	—	22·89	18·62	250·4	3·51	—	9·66	17·00
14·6	—	—	3·66	1·58	12·3	—	—	·88	1·15
11·9	—	—	—	·57	16·7	—	—	—	·27
·9	—	—	—	·21	3·5	—	—	—	·11
—	—	—	—	—	—	—	—	—	—
13·7	·92	—	3·66	1·00	10·5	5·27	—	2·63	1·01
23·8	—	—	—	1·60	23·7	—	—	—	1·48
—	—	—	—	—	—	—	—	—	—
55·9	·92	—	—	2·61	82·6	1·76	—	·88	4·88
96·2	2·74	—	·92	7·72	81·7	3·51	—	·88	4·46
96·2	—	—	—	5·87	145·9	—	—	—	6·19
22·9	—	—	—	1·16	36·0	—	—	—	3·08
5·5	·92	—	—	·16	7·1	·88	—	1·76	·33
41·2	—	—	—	3·72	20·2	—	—	·88	·60
10·1	—	—	—	·84	10·5	—	—	2·63	·84
17·4	—	—	·92	·96	28·1	—	—	—	2·10
74·2	—	—	—	2·77	69·4	—	—	1·76	3·30
17·4	·92	—	3·66	2·34	12·3	—	—	1·76	·79
·9	—	—	—	·02	—	—	—	—	—
—	—	—	—	—	—	·88	—	—	—
95·2	—	—	·92	5·33	101·1	·7(	—	2·63	3·26
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	4·4	—	—	—	·38
—	—	—	—	—	—	—	—	—	—
1090·7	19·23	—	36·63	64·36	1152·8	17·57	—	27·23	58·49
1071·5	19·28	—	27·23	55·05	—	—	—	—	

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. IX.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into TROOPS stationed in WEST AFRICA during the year 1880, with the

Orders.	Average Strength, 623. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	1	—	—	—	—	—	·11
	Continued „	2	—	—	—	—	—	·10
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	404	2	—	2	—	—	13·61
	Cholera	—	—	—	—	—	—	—
	Other Diseases	8	—	—	—	—	—	·32
	Total	410	2	—	2	—	—	14·14
	Constitutional Group.							
	Rheumatism	37	—	—	—	—	—	1·52
	Primary Syphilis	47	—	—	—	—	—	3·03
	Secondary „	41	—	—	—	—	—	2·60
	Tubercular disease	19	7	—	7	—	—	1·28
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	1	—	—	—	—	—	·05
	Total	145	7	—	7	—	—	8·48
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	8	1	—	1	—	—	·24
2	Eye	16	—	—	—	—	—	·69
3	Ear	2	—	—	—	—	—	·03
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	12	2	—	2	—	—	·49
6	Absorbent „	16	—	—	—	—	—	·88
7	Ductless glands	—	—	—	—	—	—	—
8	Respiratory System	51	1	—	1	—	—	2·07
9	Digestive „	69	—	—	—	—	—	2·33
10	Urinary System — Gonorrhœa	57	—	—	—	—	—	2·93
	Urinary System — Sequelæ of Gonor.	17	—	—	—	—	—	·74
	Urinary System — Other diseases	4	—	—	—	—	—	·08
11	Generative System	7	—	—	—	—	—	·19
12	Organs of Locomotion	11	—	—	—	—	—	1·13
13	Cellular Tissue	18	—	—	—	—	—	·62
14	Cutaneous System	55	—	—	—	—	—	2·43
	III.—*Debility*	7	—	—	—	—	—	·21
	IV.—*Poisons*	—	—	—	—	—	—	—
	V.—*Injuries.*							
1	General	—	1	—	1	—	—	—
2	Local	58	—	—	—	—	—	1·15
3	In action	—	—	—	—	—	—	—
	No appreciable disease	—	—	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	963	14	—	14	—	—	38·83
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the BLACK Ratios per 1,000 of the Strength, and the Average Ratios for 10 years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
1·6	—	—	—	·18	14·2	—	—	—	·59
3·2	—	—	—	·16	2·0	—	—	—	·08
—	—	—	—	—	—	—	—	—	—
648·5	3·21	—	—	21·85	569·1	—	—	—	22·91
—	—	—	—	—	—	—	—	—	—
4·8	—	—	—	·51	44·7	—	—	—	1·80
658·1	3·21	—	—	22·70	630·1	—	—	—	25·38
59·4	—	—	—	2·44	81·3	—	—	2·03	3·27
75·4	—	—	—	4·86	75·2	—	—	—	3·03
65·8	—	—	—	4·17	79·3	—	—	8·13	3·19
30·5	11·23	—	—	2·05	24·4	8·13	—	4·06	·98
—	—	—	—	—	—	—	—	—	—
1·6	—	—	—	·09	4·0	2·03	—	—	·16
232·7	11·23	—	—	13·61	264·2	10·16	—	14·22	10·63
12·8	1·61	—	—	·39	22·4	—	—	4·06	·93
25·7	—	—	—	1·11	22·4	—	—	6·10	·93
3·2	—	—	—	·05	12·2	—	—	—	·49
—	—	—	—	—	—	—	—	—	—
19·3	3·21	—	—	·79	44·7	—	—	12·20	1·80
25·7	—	—	—	1·41	16·3	—	—	—	·65
—	—	—	—	—	—	—	—	—	—
81·9	1·61	—	—	3·32	77·2	—	—	2·03	3·14
110·7	—	—	—	3·74	103·7	4·06	—	2·03	4·15
91·5	—	—	—	4·70	101·6	—	—	—	4·06
27·3	—	—	—	1·18	14·2	—	—	—	·59
6·4	—	—	—	·13	2·0	—	—	—	·08
11·2	—	—	—	·31	20·3	—	—	—	·80
17·7	—	—	—	1·81	8·1	—	—	—	·33
28·9	—	—	—	·99	26·4	—	—	—	1·04
88·3	—	—	—	3·90	107·7	—	—	—	4·32
11·2	—	—	—	·34	6·1	—	—	—	·27
—	—	—	—	—	2·0	—	—	—	·08
—	1·61	—	—	—	—	—	—	—	—
93·1	—	—	—	1·85	99·6	—	—	2·03	4·03
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	2·0	—	—	—	·08
—	—	—	—	—	—	—	—	—	—
1845·7	22·47	—	—	62·33	1583·3	14·22	—	42·67	63·78
1640·5	25·07	—	42·67	64·01	—	—	—	—	—

* 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. X.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed at the CAPE OF GOOD HOPE and ST. HELENA during the year 1880,

Orders.	Average Strength, 5,552. Diseases.	Admissions into Hospital	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I. *General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	3	—	—	—	—	—	2·71
	Continued „	873	56	—	56	24	—	53·24
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	132	4	—	4	12	2	5·56
	Cholera	—	—	—	—	—	—	—
	Other Diseases	14	—	—	—	—	—	·64
	Total	1,022	60	—	60	36	2	62·15
	Constitutional Group.							
	Rheumatism	195	—	—	—	13	17	13·76
	Primary Syphilis	413	—	—	—	—	—	35·77
	Secondary „	88	1	—	1	3	2	7·78
	Tubercular Diseases	18	2	1	3	6	13	1·92
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	8	1	—	1	—	2	·98
	Total	722	4	1	5	22	34	60·21
	II. *Local Diseases.*							
	Diseases of the—							
1	Nervous System	54	4	1	5	18	9	6·62
2	Eye	54	—	—	—	7	7	4·56
3	Ear	28	—	—	—	2	6	2·49
4	Nose	1	—	—	—	—	—	·03
5	Circulatory System	116	4	4	8	59	31	14·01
6	Absorbent „	56	—	—	—	1	2	4·71
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	170	2	2	4	10	10	15·07
9	Digestive „	846	14	—	14	28	13	45·17
10	Urinary System — Gonorrhœa	164	—	—	—	—	—	13·65
	Urinary System — Sequelæ of Gonorr.	31	—	—	—	—	—	3·77
	Urinary System — Other diseases	28	—	—	—	4	4	1·17
11	Generative System	30	—	—	—	1	5	1·56
12	Organs of Locomotion	26	—	1	1	10	11	2·75
13	Cellular Tissue	66	—	—	—	—	2	2·80
14	Cutaneous System	254	—	—	—	1	—	15·06
	III. *Debility*	191	1	—	1	48	38	18·83
	IV. *Poisons*	18	2	—	2	—	—	1·44
	V. *Injuries.*							
1	General	7	8	—	8	—	—	·49
2	Local	434	3	—	3	10	16	21·51
3	In action	103	68	—	68	5	33	·24
	No appreciable disease	4	—	—	—	—	—	·07
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	4,425	170	9	179	262	223	298·36
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879 to

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS with the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
·5	—	—	—	·49	1·2	—	·08	—	·07
157·3	10·09	4·33	—	9·59	213·6	17·35	20·06	—	12·30
—	—	—	—	—	—	—	—	—	—
23·8	·72	2·16	·36	1·00	65·9	1·91	7·64	—	3·83
—	—	—	—	—	—	—	—	—	—
2·5	—	—	—	·12	2·2	·08	·08	—	·12
184·1	10·81	6·49	·36	11·20	282·9	19·34	27·86	—	16·32
35·1	—	2·34	3·06	2·48	55·4	—	11·46	1·83	3·07
74·4	—	—	—	6·44	16·9	—	—	—	·94
15·9	·18	·54	·36	1·40	19·1	—	1·03	·16	1·06
3·2	·54	1·08	2·34	·35	4·8	1·11	1·83	1·67	·27
—	—	—	—	—	·7	—	·08	—	·04
1·4	·18	—	·36	·18	2·9	·16	·40	—	·16
130·0	·90	3·96	6·12	10·85	99·8	1·27	14·80	3·66	5·54
9·7	·90	3·24	1·62	1·19	13·2	·64	3·26	·72	·73
9·7	—	1·26	1·26	·82	12·4	—	1·67	1·19	·67
5·0	—	·36	1·08	·45	3·4	—	·72	·08	·19
·2	—	—	—	·01	·2	—	—	—	·01
20·9	1·44	10·63	5·58	2·52	22·4	·88	10·74	4·69	1·25
10·1	—	·18	·36	·85	10·9	—	·24	·16	·61
—	—	—	—	—	—	—	—	—	—
30·6	·72	1·80	1·80	2·71	40·4	2·39	3·26	·96	2·20
152·4	52	5·04	2·34	8·14	218·3	7·16	16·08	3·50	12·50
29·5	—	—	—	2·46	14·7	—	—	—	·81
5·6	—	—	—	·68	5·5	—	·48	·16	·29
5·0	—	·72	·72	·21	4·1	·24	·96	·16	·21
5·4	—	·18	·90	·28	10·0	—	·96	·16	·55
4·7	·18	1·80	1·98	·50	6·5	·16	1·19	·72	·36
11·9	—	—	·36	·50	21·1	—	·56	·16	1·19
45·8	—	·18	—	2·71	59·9	—	·88	·32	3·44
34·4	·18	8·65	6·85	3·39	55·2	·16	20·37	1·91	3·30
3·2	·36	—	—	·26	3·8	1·03	—	—	·21
1·3	1·44	—	—	·09	·2	1·67	—	—	} 4·14
78·2	·54	1·80	2·88	3·87	75·5	·16	2·94	1·19	
18·6	12·25	·90	5·95	.04	14·5	64·23	4·46	1·59	·81
·7	—	—	—	·01	1·1	—	—	—	·07
—	—	—	—	—	—	—	—	—	—
797·0	32·24	47·19	40·16	53·74	976·0	99·33	111·43	21·33	55·40
928·5	39·12	49·12	15·00	47·83	—	—	—	—	—

1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for the year 1882, &c., &c.

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ABSTRACT No. XI.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed at MAURITIUS during the Year 1880, with the Ratios per

Orders.	Average Strength, 353. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	—	—	—	—	—	—	—
	Continued „	33	—	—	—	—	—	·96
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	357	—	—	—	15	—	13·16
	Cholera	—	—	—	—	—	—	—
	Other Diseases	—	—	—	—	—	—	—
	Total	390	—	—	—	15	—	14·12
	Constitutional Group.							
	Rheumatism	10	—	—	—	—	—	1·27
	Primary Syphilis	41	—	—	—	—	—	2·39
	Secondary „	20	—	—	—	3	—	1·34
	Tubercular diseases	—	—	1	1	—	—	—
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	3	—	—	—	2	—	·39
	Total	74	—	1	1	5	—	5·39
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	5	—	—	—	2	—	·63
2	Eye	3	—	—	—	—	—	·05
3	Ear	7	—	—	—	—	—	·42
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	18	1	—	1	4	3	2·22
6	Absorbent „	19	—	—	—	—	—	1·80
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	17	—	—	—	—	—	·67
9	Digestive „	53	—	—	—	—	—	1·78
10	Urinary System — Gonorrhœa	39	—	—	—	—	—	2·29
	Urinary System — Sequelæ of Gonorr.	17	—	—	—	—	—	1·00
	Urinary System — Other diseases	6	—	—	—	—	—	·06
11	Generative System	4	—	—	—	—	—	·10
12	Organs of Locomotion	1	—	—	—	—	—	·05
13	Cellular Tissue	14	—	—	—	—	—	·39
14	Cutaneous System	28	—	—	—	—	—	1·06
	III.—*Debility*	21	—	—	—	1	2	·95
	IV.—*Poisons*	1	—	—	—	—	—	·01
	V.—*Injuries.*							
1	General	—	—	—	—	—	—	—
2	Local	60	—	—	—	1	—	1·78
3	In action	—	—	—	—	—	—	—
	No appreciable disease	1	—	—	—	—	—	·01
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	778	1	1	2	28	5	34·78
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The ratios for the two years 1879 to

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
—	—	—	—	—	—	—	—	—	—
93·5	—	—	—	2·72	114·9	2·87	—	—	3·30
—	—	—	—	—	—	—	—	—	—
1011·3	—	42·49	—	37·28	1557·5	—	34·48	—	31·32
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
1104·8	—	42·4	—	40·00	1672·4	2·87	34·48	—	34·62
28·3	—	—	—	3·60	54·6	—	—	2·87	2·59
116·1	—	—	—	6·77	155·2	—	—	—	7·67
56·7	—	8·50	—	3·79	120·7	—	—	—	6·38
—	2·83	—	—	—	11·5	—	5·75	2·87	1·55
—	—	—	—	—	—	—	—	—	—
8·5	—	5·67	—	1·11	—	—	—	—	—
209·6	2·83	14·17	—	15·27	342·0	—	5·75	5·75	18·19
14·2	—	5·67	—	1·79	2·9	—	—	2·87	·34
8·5	—	—	—	·14	8·6	—	—	2·87	1·15
19·8	—	—	—	1·19	20·1	—	—	2·87	2·01
—	—	—	—	—	—	—	—	—	—
51·0	2·83	11·33	8·50	6·29	63·2	2·87	8·62	2·87	1·95
53·8	—	—	—	5·10	48·9	—	—	—	2·56
—	—	—	—	—	—	—	—	—	—
48·2	—	—	—	1·90	60·3	—	—	5·75	2·16
150·1	—	—	—	5·04	255·7	14·37	5·75	2·87	6·90
110·5	—	—	—	6·49	63·2	—	—	—	2·21
48·2	—	—	—	2·83	14·4	—	—	2·87	·80
17·0	—	—	—	·17	31·6	2·87	2·87	—	4·80
11·3	—	—	—	·28	8·6	—	—	—	2·30
2·8	—	—	—	·14	2·9	—	—	2·87	·43
39·7	—	—	—	1·11	40·2	—	—	—	·78
79·3	—	—	—	3·00	137·9	—	—	—	3·36
59·5	—	2·83	5·67	2·69	80·5	—	8·62	5·75	2·56
2·8	—	—	—	·03	2·9	2·87	—	—	·03
—	—	—	—	—	—	—	—	—	—
170·0	—	2·83	—	5·04	186·8	—	2·87	—	6·01
—	—	—	—	—	—	—	—	—	—
2·8	—	—	—	·03	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
2203·9	5·67	79·32	14·17	98·53	3043·1	25·85	68·96	37·34	93·16
1702·3	17·94	34·99	13·73	50·26	—	—	—	—	—

1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. XII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into TROOPS stationed in CEYLON during the Year 1880, with the Ratios

Orders.	Average Strength, 1,000. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	1	—	—	—	—	—	·01
	Continued „	87	1	—	1	—	—	2·35
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	8	—	—	—	—	—	·13
	Cholera	—	—	—	—	—	—	—
	Other Diseases	—	—	—	—	—	—	—
	Total	96	1	—	1	—	—	2·49
	Constitutional Group.							
	Rheumatism	20	—	—	—	2	—	1·00
	Primary Syphilis	156	—	—	—	—	—	9·15
	Secondary „	43	—	—	—	1	1	3·24
	Tubercular diseases	19	1	1	2	11	2	2·93
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	—	—	—	—	—	—	—
	Total	238	1	1	2	14	3	16·32
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	28	1	—	1	6	—	3·69
2	Eye	15	—	—	—	1	—	1·93
3	Ear	14	—	—	—	—	—	·40
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	8	—	—	—	3	—	·35
6	Absorbent „	58	—	—	—	—	—	5·39
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	17	1	—	1	3	1	1·59
9	Digestive „	297	13	2	15	29	1	14·32
10	Urinary System — Gonorrhœa	105	—	—	—	—	—	4·93
	Urinary System — Sequelæ of Gonorr.	16	—	—	—	—	—	·85
	Urinary System — Other diseases	7	—	—	—	—	—	·16
11	Generative System	19	—	—	—	—	—	·58
12	Organs of Locomotion	4	—	—	—	2	1	·41
13	Cellular Tissue	39	—	—	—	—	—	1·13
14	Cutaneous System	111	—	—	—	—	1	4·66
	III.—*Debility*	11	—	—	—	—	4	·47
	IV.—*Poisons*	4	1	—	1	—	—	·06
	V.—*Injuries.*							
1	General	—	3	—	3	—	—	—
2	Local	150	1	—	1	—	1	4·50
3	In action	—	—	—	—	—	—	—
	No appreciable disease	1	—	—	—	—	—	·01
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	1,238	22	3	25	58	12	64·24
	Average of 10 years, 1870-79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The average ratios for the two years 1879

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the WHITE per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
1·0	—	—	—	·01	—	—	—	—	—
87·0	1·00	—	—	2·35	94·2	—	—	—	2·53
—	—	—	—	—	—	—	—	—	—
8·0	—	—	—	·13	22·7	1·14	—	—	1·14
—	—	—	—	—	1·1	—	—	—	·01
—	—	—	—	—	15·9	—	—	—	·61
96·0	1·00	—	—	2·49	133·9	1·14	—	—	4·29
20·0	—	2·00	—	1·00	30·7	—	—	—	·96
156·0	—	—	—	9·15	123·7	—	—	—	6·47
43·0	—	1·00	1·00	3·24	28·4	—	—	—	2·10
19·0	2·00	11·00	2·00	2·93	19·3	5·67	4·54	3·40	1·86
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	4·5	—	—	—	·25
238·0	2·00	14·00	3·00	16·32	206·6	5·67	4·54	3·40	11·64
28·0	1·00	6·00	—	3·69	6·8	—	5·67	—	2·61
15·0	—	1·00	—	1·93	20·4	—	2·27	1·14	·96
14·0	—	—	—	·40	7·9	—	—	—	·09
—	—	—	—	—	1·1	—	—	—	·01
8·0	—	3·00	—	·35	11·4	1·14	—	2·27	·40
58·0	—	—	—	5·39	59·0	—	—	—	6·63
—	—	—	—	—	—	—	—	—	—
17·0	1·00	3·00	1·00	1·59	32·9	2·27	—	—	1·50
297·0	15·00	29·00	1·00	14·32	279·2	7·94	11·35	1·14	12·89
105·0	—	—	—	4·93	60·2	—	—	—	2·47
16·0	—	—	—	·85	19·3	—	—	—	1·25
7·0	—	—	—	·16	12·5	—	—	—	·40
19·0	—	—	—	·58	12·5	—	—	—	·29
4·0	—	2·00	1·00	·41	5·7	—	1·14	1·14	1·01
39·0	—	—	—	1·13	39·7	—	1·14	1·14	1·24
111·0	—	—	1·00	4·66	139·6	—	1·14	2·27	4·02
11·0	—	—	4·00	·47	7·9	—	—	2·27	·30
4·0	1·00	—	—	·06	7·9	—	—	—	·18
—	3·00	—	—	—	—	1·14	1·14	1·14	—
150·0	1·00	—	1·00	4·50	115·8	—	—	—	4·05
—	—	—	—	—	—	—	—	—	—
1·0	—	—	—	·01	1·1	—	—	—	·01
—	—	—	—	—	—	—	—	—	—
1238·0	25·00	58·00	12·00	64·24	1181·4	19·30	28·39	15·91	56·24
982·0	14·90	35·04	15·51	49·84	—	—	—	—	—

to 1880 will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. XIII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into TROOPS stationed in CHINA and the STRAITS SETTLEMENTS, during the Year 1880,

Orders.	Average Strength, 1,781. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I. *General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	3	—	—	—	—	—	·58
	Continued „	222	—	—	—	—	—	4·77
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	129	1	—	1	3	—	4·49
	Cholera	—	—	—	—	—	—	—
	Other Diseases	7	2	—	2	—	—	·17
	Total	361	3	—	3	3	—	10·01
	Constitutional Group.							
	Rheumatism	25	—	—	—	—	—	1·47
	Primary Syphilis	107	—	—	—	—	—	9·29
	Secondary „	18	—	—	—	1	2	2·17
	Tubercular diseases	12	2	—	2	3	4	2·72
	Scurvy and Purpura	—	—	—	—	—	—	—
	Other Diseases	2	—	—	—	1	—	·06
	Total	164	2	—	2	5	6	15·71
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	37	3	1	4	1	—	3·11
2	Eye	26	—	—	—	3	4	·98
3	Ear	26	—	—	—	—	1	·84
4	Nose	—	—	—	—	—	—	—
5	Circulatory System	20	2	—	2	4	5	1·21
6	Absorbent „	60	—	—	—	—	—	6·75
7	Ductless Glands	—	—	—	—	—	—	—
8	Respiratory System	74	—	—	—	1	—	2·82
9	Digestive System	258	2	—	2	6	1	8·67
10	Urinary System — Gonorrhœa	192	—	—	—	—	—	11·32
	Urinary System — Sequelæ of Gonorr.	32	—	—	—	—	—	2·03
	Urinary System — Other diseases	8	—	—	—	1	—	·31
11	Generative system	28	—	—	—	—	—	1·07
12	Organs of Locomotion	8	—	—	—	2	1	1·15
13	Cellular Tissue	30	—	—	—	—	—	1·02
14	Cutaneous System	131	—	—	—	1	—	3·93
	III.—*Debility*	47	—	—	—	6	4	3·47
	IV.—*Poisons*	22	1	—	1	—	—	·83
	V.—*Injuries.*							
1	General	2	1	—	1	—	—	·11
2	Local	210	—	—	—	2	2	6·46
3	In action	—	—	—	—	—	—	—
	No appreciable disease	7	—	—	—	—	—	·04
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General total	1,743	14	1	15	35	24	81·84
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The ratios for the two years 1879 to 1880

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the WHITE with the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
1·7	—	—	—	·33	7·5	—	—	—	·19
124·7	—	—	—	2·68	71·4	·53	—	—	2·25
—	—	—	—	—	—	—	—	—	—
72·4	·56	1·69	—	2·52	52·8	—	—	—	1·73
—	—	—	—	—	—	—	—	—	—
3·9	1·12	—	—	·09	2·6	—	—	—	·14
202·7	1·69	1·69	—	5·62	134·3	·53	—	—	4·31
14·1	—	—	—	·82	19·2	—	—	—	·92
60·1	—	—	—	5·22	83·2	—	—	—	6·29
10·1	—	·56	1·12	1·22	11·2	—	·53	1·07	·86
6·7	1·12	1·69	2·24	1·53	36·2	·53	21·32	6·93	5·11
—	—	—	—	—	—	—	—	—	—
1·1	—	·56	—	·03	·5	1·07	—	—	·01
92·1	1·12	2·81	3·37	8·82	150·3	1·60	21·85	8·00	13·19
20·8	2·24	·56	—	1·75	13·9	2·13	2·67	—	1·17
14·6	—	1·69	2·24	·55	16·5	—	1·60	·53	1·16
14·6	—	—	·56	·47	5·3	—	—	—	·24
—	—	—	—	—	·5	—	—	—	·01
11·2	1·12	2·24	2·81	·68	33·6	—	7·46	3·20	2·99
33·7	—	—	—	3·79	33·0	—	—	—	2·83
—	—	—	—	—	—	—	—	—	—
41·5	—	·56	—	1·58	46·4	—	2·13	—	3·22
144·9	1·12	3·37	·56	4·87	133·8	2·13	1·07	—	7·43
107·8	—	—	—	6·36	99·7	—	—	—	5·88
18·0	—	—	—	1·14	21·3	—	—	—	1·02
4·5	—	·56	—	·17	6·9	·53	·53	—	·55
15·7	—	—	—	·60	17·1	—	—	—	·79
4·5	—	1·12	·56	·64	1·1	—	—	·53	·22
16·8	—	—	—	·57	19·7	—	—	—	1·41
73·6	—	·56	—	2·21	52·2	—	—	—	2·20
26·4	—	3·37	2·24	1·95	26·7	—	2·13	1·60	1·44
12·4	·56	—	—	·47	7·5	—	—	—	·19
1·1	·56	—	—	·06	—	—	—	—	—
117·9	—	1·12	1·12	3·63	106·6	—	·53	·53	3·01
—	—	—	—	—	—	—	—	—	—
3·9	—	—	—	·02	2·1	—	—	—	·08
—	—	—	—	—	—	—	—	—	—
978·7	8·42	19·65	13·47	45·95	928·5	6·92	39·97	·14·39	53·34
1247·1	14·14	44·85	21·01	5 1·28	—	—	—	—	—

will be given in the Report for 1881, those for the three years 1879 to 1881 in that or 1882, &c., &c.

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ABSTRACT No. XIV.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed in the BENGAL PRESIDENCY during the Year 1880, with the

Orders.	Average Strength, 30,656. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number Constantly Sick.†
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	20	—	—	—	—	—	—
	Continued „	4,922	109	—	109	3	—	—
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	19,778	75	1	76	54	1	—
	Cholera	209	149	—	149	—	—	—
	Other diseases	163	6	—	6	—	1	—
	Total of Febrile group	25,092	339	1	340	57	2	—
	Constitutional Group.							
	Rheumatism	1,211	1	—	1	35	29	—
	Primary Syphilis	2,916	—	—	—	1	—	—
	Secondary „	797	—	—	—	22	26	—
	Tubercular Diseases	229	42	12	54	27	58	—
	Scurvy and Purpura	13	—	—	—	—	—	—
	Other diseases	82	4	1	5	17	2	—
	Total of Constitutional group	5,248	47	13	60	102	115	—
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	670	116	1	117	82	28	—
2	Eye	501	—	—	—	5	27	—
3	Ear	331	—	—	—	14	13	—
4	Nose	24	—	—	—	—	1	—
5	Circulatory System	448	23	1	24	98	119	—
6	Absorbent „	672	—	—	—	—	2	—
7	Ductless Glands	5	—	—	—	—	1	—
8	Respiratory System	1,568	57	8	65	8	35	—
9	Digestive „	7,854	184	6	190	128	93	—
10	Urinary System — Gonorrhœa	3,459	—	—	—	—	—	—
	Urinary System — Sequelæ of Gonorr.	369	—	—	—	—	1	—
	Urinary System — Other diseases	369	7	—	7	10	6	—
11	Generative System	459	—	—	—	—	4	—
12	Organs of Locomotion	160	3	—	3	11	13	—
13	Cellular Tissue	498	—	—	—	3	—	—
14	Cutaneous System	2,320	—	—	—	8	11	—
	III.—*Debility*	1,130	7	—	7	231	210	—
	IV.—*Poisons*	125	14	—	14	—	—	—
	V.—*Injuries.*							
1	General	4	34	1	35	—	1	—
2	Local	2,691	35	—	35	21	17	—
3	In action	2	—	—	—	8	—	—
	No appreciable disease	48	—	—	—	1	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	54,047	866	31	897	782	699	2176·15
	Average of 10 years, 1870–79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The ratios for the year 1879 will be given
† The average numbers constantly sick by Classes and Orders

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS Ratio per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000 for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
·6	—	—	—	—	4·2	·10	—	—	—
160·6	3·55	·10	—	—	168·5	4·05	·03	—	—
—	—	—	—	—	—	—	—	—	—
645·2	2·48	1·76	·03	—	863·5	2·58	5·91	·14	—
6·8	4·86	—	—	—	9·6	8·27	·14	—	—
5·3	·20	—	·03	—	3·0	·14	—	—	—
818·5	11·09	1·86	·06	—	1048·8	15·14	6·08	·14	—
39·5	·03	1·14	·95	—	38·5	·07	1·68	1·48	—
95·1	—	·03	—	—	76·9	—	·03	—	—
26·0	—	·72	·85	—	27·7	·10	1·34	·86	—
7·5	1·76	·88	1·89	—	6·9	2·03	2·06	1·68	—
·4	—	—	—	—	·8	—	—	—	—
2·7	·16	·55	·06	—	3·2	·17	1·10	·24	—
171·2	1·95	3·32	3·75	—	154·0	2·37	6·21	4·26	—
21·9	3·82	2·67	·92	—	21·9	3·95	3·19	1·06	—
16·3	—	·16	·88	—	16·8	—	·72	·62	—
10·8	—	·46	·43	—	9·8	—	·45	·62	—
·8	—	—	·03	—	·8	—	·07	·03	—
14·6	·78	3·04	3·88	—	16·3	·82	3·67	3·16	—
21·9	—	—	·06	—	16·0	—	·07	·10	—
·2	—	—	·03	—	·2	·03	·03	—	—
51·1	2·12	·26	1·14	—	60·3	1·68	1·34	·79	—
256·2	6·20	4·18	3·04	—	266·8	5·73	7·97	3·78	—
112·8	—	—	—	—	132·0	—	—	—	—
12·0	—	—	·03	—	13·8	—	—	·34	—
12·0	·23	·33	·20	—	13·9	·28	·55	·14	—
15·0	—	—	·13	—	13·8	·03	·17	·17	—
5·2	·10	·36	·43	—	4·6	·14	·75	·65	—
16·2	—	·10	—	—	16·6	—	·14	·07	—
75·7	—	·26	·36	—	75·5	—	·41	·45	—
36·9	·23	7·53	6·85	—	44·3	·17	10·92	8·10	—
4·1	·46	—	—	—	3·8	·41	—	—	—
·1	1·14	—	·03	—	1·1	·52	—	—	—
87·8	1·14	·69	·55	—	87·7	·79	·82	·55	—
·1	—	·26	—	—	—	—	·10	·03	—
1·6	—	·03	—	—	·8	—	—	—	—
—	—	—	—	—	—	—	—	—	—
1763·0	29·26	25·51	22·80	70·99	2019·6	32·06	43·66	25·06	76·60
1489·6	20·17	41·25	16·10	58·69					

in the Report for 1880, those for 1879 to 1880 in that for 1881, those for 1879 to 1881 in that for 1882, &c., &c. have not been received up to the time of going to press.

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ABSTRACT No. XV.—TABLE, taken from the REPORTS of the PRINCIPAL at the CHIEF STATIONS

Stations.		Average Annual Strength.	Admitted into Hospital.
Presidency	Calcutta	820	970
	Barrackpore	244	468
	Dum-Dum	512	728
	Hazaribagh	102	96
Allahabad	Allahabad	843	1,337
	Fort Allahabad	158	335
	Dinapore	1,080	1,499
	Benares	435	767
	Chunar	66	283
	Cawnpore	1,049	1,378
Oudh	Lucknow	2,021	2,609
	Fyzabad	326	480
	Sitapur	104	223
Rohilcund	Bareilly	1,018	1,475
	Shahjehanpur	426	518
	Moradabad	250	391
	Ranikhet	411	899
	Choubatia	267	301
Saugor	Saugor	336	668
	Jubbulpore	377	603
	Nowgong	294	412
Gwalior	Morar	885	1,802
	Fortress Gwalior	338	436
	Jhansi	360	670
Meerut	Meerut	837	1,618
	Fatehgarh	203	401
	Agra	834	1,875
	Muttra	39	60
	Delhi	531	1,867
	Roorkee	63	103
	Chakrata	102	92
Sirhind	Umballa	1,102	1,806
	Jullundur	327	529
	Subathu	287	347
	Dagshi	711	882
	Jutogh	4	15
	Solon	92	75
Lahore	Meean Meer	902	2,745
	Fort Lahore	126	295
	Amritsar	142	371
	Fort Govindgarh	81	140
	Ferozepore	1,019	1,257
	Mooltan	818	999
	Fort Kangra	53	159
Rawal Pindi	Rawal Pindi	1,248	2,932
	Campbellpore	131	286
	Sialkot	687	1,117
	Dera Ismail Khan	98	230
	Fort Attock	195	581
	Khyra Gully	11	20
Peshawar	Peshawar	1,137	4,000
	Nowshera	774	2,056
	Cherat	429	305
	Hoti Murdan	61	110
Troops marching		2,180	2,944
Hill depôts and other hospitals		2,710	4,987

* 2 years only. † 1869 to 1879. ‡ 9 years only. § 1 year only.

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MEDICAL OFFICER, showing the ADMISSIONS and DEATHS which took place in the BENGAL COMMAND.

Died in India.	Ratio per 1,000 of Strength.		Ratio per 1,000 of Strength, 1870–79.	
	Admitted.	Died.	Admitted.	Died.
5	1182·9	6·10	1083·0	10·93
4	1918·0	16·39	1987·3	19·59
12	1421·9	23·44	1165·8	15·24
1	941·2	9·80	1087·7	15·57
48	1586·0	56·94	1570·0	20·60
6	2120·3	37·97	*1673·5	30·93
7	1388·0	6·48	1470·0	20·04
9	1763·2	20·69	1555·4	20·66
2	4287·9	30·30	†2440·5	35·57
21	1313·6	20·02	1660·2	21·81
50	1290·9	24·74	1346·7	19·65
3	1472·4	9·20	1312·6	24·89
6	2144·2	57·69	1183·2	13·93
9	1448·9	8·84	1040·6	12·35
7	1216·0	16·43	1167·1	14·30
11	1564·0	44·00	1118·4	14·50
10	970·8	24·33	‡928·5	12·04
4	1127·3	14·98	§1101·0	2·98
4	1988·1	11·90	1585.8	16·42
3	1599·5	7·96	1292·8	15·48
4	1401·4	13·61	1695·9	21·46
10	2036·1	11·30	1480·0	24·02
10	1289·9	29·59	1248·0	20·82
4	1861·1	11·11	2323·5	11·78
20	1927·1	23·89	1734·1	23·65
5	1975·4	24·63	1338·4	12·48
18	2248·2	21·58	1348·1	17·36
1	1538·5	25·64	1305·6	20·82
13	3516·0	24·48	2224·7	24·92
1	1634·9	15·87	1228·7	17·22
1	902·0	9·80	750·5	9·27
10	1638·8	9·07	1532·1	16·31
7	1617·7	21·41	1573·8	19·29
8	1209·1	27·87	978·4	14·05
12	1240·5	16·88	1032·1	12·12
1	3750·0	250·00	834·9	13·11
—	815·2	—	‖1082·4	14·54
32	3043·2	35·48	2679·8	36·07
3	2341·3	23·81	¶2333·3	31·85
2	2612·7	14·08	¶2673·3	15·99
3	1728·4	37·04	¶1928·7	17·11
14	1233·6	13·74	1513·5	17·06
7	1221·3	8·56	1597·5	14·93
1	3000·0	18·87	2295·7	24·83
25	2349·4	20·03	1508·3	15·58
4	2183·2	30·53	1612·7	14·57
6	1625·9	8·73	1536·6	21·48
2	2346·9	20·41	2300·2	19·69
7	2979·5	35·90	2032·9	24·91
1	1818·2	90·91	**1847·9	28·21
43	3518·0	37·82	2671·5	25·58
43	2656·3	55·56	2154·9	17·95
9	711·0	20·98	¶1412·7	17·83
1	1803·3	16·39	§5413·0	—
87	1350·5	39·91	946·5	14·36
229	1840·2	84·50	1609·9	34·12

‖ 6 years only. ¶ 8 years only ** 7 years only.

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ABSTRACT XVI.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL CLASSES of DISEASES in each of the MILITARY DIVISIONS in

Order.	Military Divisions.	Presidency.		Allahabad.		Oudh.		Rôhilcund.		Saugor.	
	Average Strength.	1,709		3,442		2,471		2,234		980	
	Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	I. *General Diseases.*										
	Febrile Group.										
	Eruptive Fevers	3	—	3	—	1	—	1	—	—	—
	Continued „	217	—	813	9	227	19	370	13	234	3
	Yellow Fever	—	—	—	—	—	—	—	—	—	—
	Paroxysmal Fevers	910	6	1,252	4	776	—	737	2	557	2
	Cholera	—	—	74	53	60	38	14	10	1	—
	Other Diseases	5	—	6	1	8	1	2	—	4	—
	Total	1,135	6	2,148	67	1,072	58	1,124	25	796	5
	Constitutional Group.										
	Rheumatism	71	—	91	—	64	—	92	—	30	—
	Primary Syphilis	82	—	447	—	263	—	212	—	97	—
	Secondary „	22	—	98	—	106	—	72	—	49	—
	Tubercular Diseases	6	2	24	3	23	3	33	3	8	1
	Scurvy and Purpura	—	—	1	—	—	—	—	—	1	—
	Other diseases	3	—	2	—	11	—	5	—	3	—
	Total	184	2	663	3	467	3	414	3	188	1
	II. *Local Diseases.*										
	Diseases of the—										
1	Nervous System	20	2	70	8	49	4	48	1	30	4
2	Eye	16	—	68	—	41	—	51	—	14	—
3	Ear	24	—	28	—	23	—	16	—	17	—
4	Nose	—	—	1	—	2	—	2	—	—	—
5	Circulatory System	20	2	31	1	43	—	53	2	4	—
6	Absorbent „	63	—	188	—	52	—	31	—	21	—
7	Ductless Glands	1	—	—	—	—	—	1	—	—	—
8	Respiratory System	57	4	108	4	121	1	93	1	37	1
9	Digestive „	317	5	756	7	630	11	476	7	242	1
10	Urinary System. Gonorrhœa	277	—	499	—	224	—	317	—	142	—
	Urinary System. Sequelæ of Gonorrhœa	21	—	59	—	32	—	30	—	8	—
	Urinary System. Other Diseases	26	—	48	—	33	1	34	—	24	—
11	Generative System	41	—	49	—	55	—	39	—	13	—
12	Organs of Locomotion	6	—	25	—	10	—	9	—	5	—
13	Cellular Tissue	27	—	63	—	44	—	33	—	10	—
14	Cutaneous System	131	—	293	—	206	—	166	—	59	—
	III. *Debility*	55	—	126	—	85	—	64	—	14	—
	IV. *Poisons*	6	1	8	1	9	—	7	—	4	—
	V. *Injuries.*										
1	General	1	2	1	4	—	—	1	4	—	—
2	Local	128	2	319	2	307	4	141	1	71	—
3	In action	—	—	—	—	—	—	—	—	—	—
	No appreciable Disease	—	—	8	—	10	—	8	—	3	—
	Cause unknown (refers to deaths only)	—	—	—	—	—	—	—	—	—	—
	General total	2,556	26	5,559	97	3,515	82	3,158	44	1,702	12

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OFFICER, showing the PREVALENCE and MORTALITY of the DIFFERENT the BENGAL COMMAND with the ratios per 1,000 of Strength.

Gwalior.		Meerut.		Sirhind.		Lahore.		Rawal Pindi.		Peshawar.		Troops on the March.		Hill Depôts.		Field Service.	
1,690		2,906		2,952		3,230		2,956		2,533		2,340		1,532		9,271	
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
—	—	8	—	4	—	1	—	1	—	1	—	—	—	—	—	8	1
212	3	807	8	242	13	621	6	690	9	438	16	216	4	39	1	1,824	56
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,531	5	2,061	4	1,440	4	2,358	6	2,376	9	3,953	22	778	6	1,263	1	4,271	44
6	3	4	4	—	—	—	—	2	1	11	9	41	34	—	—	22	14
3	—	22	—	24	2	14	1	29	—	37	1	12	—	17	—	100	7
1,752	11	3,502	16	1,710	19	2,994	13	3,098	19	4,440	48	1,047	44	1,319	2	6,234	122
46	—	138	—	241	—	122	—	174	—	102	1	64	—	89	—	344	1
86	—	401	—	139	—	332	—	262	—	298	—	254	—	160	—	392	—
42	1	43	—	116	—	78	—	75	—	37	—	26	—	89	—	97	—
9	2	12	2	20	—	21	5	23	4	18	4	8	1	28	6	38	9
1	—	—	—	1	—	10	—	2	—	—	—	—	—	2	—	5	—
3	—	11	2	7	2	12	—	3	—	8	—	4	1	10	1	23	—
187	3	605	4	524	2	575	5	539	4	468	5	356	2	378	7	899	10
31	3	68	13	56	7	92	23	93	12	103	29	37	6	34	—	130	29
33	—	54	—	47	—	60	—	55	—	42	—	29	—	14	—	160	—
18	—	34	—	41	—	41	—	47	—	34	—	6	—	9	—	45	—
1	—	2	—	3	—	3	—	7	—	1	—	—	—	1	—	1	—
32	1	31	3	61	3	34	2	64	3	41	2	19	3	40	1	133	4
32	—	66	—	45	—	60	—	46	—	33	—	31	—	24	—	54	—
—	—	—	—	—	—	2	—	8	—	1	—	—	—	—	—	—	—
79	—	189	7	202	5	225	9	234	4	204	6	127	6	108	3	978	85
485	4	978	24	786	20	652	15	986	24	931	30	745	22	625	4	2461	78
172	—	411	—	351	—	376	—	329	—	151	—	240	—	137	—	167	—
18	—	35	—	22	—	38	—	58	—	11	—	13	—	38	—	31	—
20	1	26	2	51	1	32	1	44	—	21	—	20	—	20	1	32	—
21	—	70	—	48	—	43	—	54	—	17	—	18	—	18	—	84	—
6	—	15	1	27	—	24	—	27	—	4	—	8	1	8	1	32	—
34	—	75	—	48	—	67	—	76	—	39	—	18	—	17	—	70	—
139	—	231	—	185	—	343	—	312	—	166	—	77	—	95	—	227	—
76	—	135	—	105	1	125	—	115	1	179	2	108	1	65	—	586	5
4	—	15	1	10	—	13	2	21	2	28	—	5	5	—	—	16	3
—	1	1	2	—	2	—	—	2	3	—	—	—	2	—	12	—	11
149	1	318	3	296	2	317	6	404	10	209	4	150	2	119	1	329	10
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	115	51
—	—	5	—	2	—	5	—	3	—	2	—	2	—	—	—	12	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3,289	25	6,866	76	4,620	62	6,130	76	6,589	82	7,123	125	3,056	94	3,078	32	12,796	408

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Ratio per 1,000

Order.	Diseases.	Presidency. Admitted.	Presidency. Died.	Allahabad. Admitted.	Allahabad. Died.	Oudh. Admitted.	Oudh. Died.	Rohilcund. Admitted.	Rohilcund. Died.	Saugor. Admitted.	Saugor. Died.
	Military Divisions.										
	Average Strength.	1,709		3,442		2,471		2,234		980	
	I. *General Diseases.*										
	Febrile Group.										
	Eruptive Fevers	1·7	—	·9	—	·4	—	·4	—	—	—
	Continued „	127·0	—	236·2	2·62	91·9	7·69	165·6	5·82	238·8	3·06
	Yellow Fever	—	—	—	—	—	—	—	—	—	—
	Paroxysmal Fevers	532·5	3·51	363·7	1·16	314·0	—	329·9	·90	568·3	2·04
	Cholera	—	—	21·5	15·40	24·3	15·38	6·3	4·47	1·0	—
	Other diseases	2·9	—	1·8	·29	3·2	·40	·9	—	4·1	—
	Total	664·1	3·51	624·1	19·47	433·8	23·47	503·1	11·19	812·2	5·10
	Constitutional Group.										
	Rheumatism	41·6	—	26·4	—	25·9	—	41·2	—	30·6	—
	Primary Syphilis	48·0	—	129·8	—	106·4	—	94·9	—	99·0	—
	Secondary „	12·9	—	28·5	—	42·9	—	32·2	—	50·0	—
	Tubercular Diseases	3·5	1·17	7·0	·87	9·3	1·22	14·8	1·34	8·2	1·02
	Scurvy and Purpura	—	—	·3	—	—	—	—	—	1·0	—
	Other diseases	1·7	—	·6	—	4·5	—	2·2	—	3·0	—
	Total	107·7	1·17	192·6	·87	189·6	1·22	185·3	1·34	191·8	1·02
	II. *Local Diseases.*										
	Diseases of the—										
1	Nervous System	11·7	1·17	20·3	2·33	19·8	1·62	21·5	·45	30·6	4·08
2	Eye	9·4	—	19·8	—	16·6	—	22·8	—	14·3	—
3	Ear	14·0	—	8·1	—	9·3	—	7·2	—	17·3	—
4	Nose	—	—	·3	—	·8	—	·9	—	—	—
5	Circulatory System	11·7	1·17	9·0	·29	17·4	—	23·7	·90	4·1	—
6	Absorbent „	36·9	—	54·6	—	21·0	—	13·9	—	21·4	—
7	Ductless Glands	·6	—	—	—	—	—	·4	—	—	—
8	Respiratory System	33·3	2·34	31·4	1·16	49·0	·40	41·7	·45	37·8	1·02
9	Digestive „	185·5	2·92	219·6	2·03	255·0	4·45	213·1	3·13	246·9	1·02
10	Urinary System { Gonorrhœa	162·1	—	145·0	—	96·7	—	141·9	—	144·9	—
	Urinary System { Sequelæ of Gonorrhœa	12·3	—	17·1	—	13·0	—	13·4	—	8·2	—
	Urinary System { Other diseases	15·2	—	14·0	—	13·4	·40	15·2	—	24·5	—
11	Generative System	24·0	—	14·2	—	22·3	—	17·5	—	13·3	—
12	Organs of Locomotion	8·5	—	7·3	—	4·0	—	4·0	—	5·1	—
13	Cellular Tissue	15·8	—	18·3	—	17·8	—	14·8	—	10·2	—
14	Cutaneous System	76·6	—	85·1	—	83·4	—	74·3	—	60·2	—
	III. *Debility*	32·2	—	36·6	—	34·4	—	28·7	—	14·3	—
	IV. *Poisons*	3·5	·59	2·3	·29	3·6	—	3·1	—	4·1	—
	V. *Injuries.*										
1	General	·6	1·17	·3	1·16	—	—	·4	1·79	—	—
2	Local	74·9	1·17	92·7	·58	124·2	1·62	63·1	·45	72·4	—
3	In action	—	—	—	—	—	—	—	—	—	—
	No appreciable disease	—	—	2·3	—	4·0	—	3·6	—	3·1	—
	Cause unknown (refers to deaths only)	—	—	—	—	—	—	—	—	—	—
	General Total	1495·6	15·21	1615·0	28·18	1422·5	33·18	1413·6	19·70	1736·7	12·24

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of Mean Strength.

Gwalior.		Meerut.		Sirhind.		Lahore.		Rawal Pindi.		Peshawar.		Troops on the March.		Hill Depôts.		Field Service.	
1,690		2,906		2,952		3,230		2,956		2,533		2,340		1,532		9,271	
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
—	—	2·7	—	1·4	—	·3	—	·3	—	·4	—	—	—	—	—	·9	·11
125·4	1·78	277·7	2·75	82·0	4·40	192·3	1·86	233·4	3·04	172·9	6·32	92·3	1·71	25·5	·65	196·7	6·04
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
905·9	2·95	915·7	1·38	487·8	1·36	730·0	1·86	803·8	3·04	1560·6	8·69	332·5	2·56	824·4	·65	460·7	4·75
3·6	1·78	1·4	1·38	—	—	—	—	·7	·34	4·4	3·55	17·5	14·53	—	—	2·4	1·51
1·8	—	7·6	—	8·1	·68	4·3	·31	9·8	—	14·6	·39	5·1	—	11·1	—	11·7	·75
1036·7	6·51	1205·1	5·51	579·3	6·44	926·9	4·03	1048·0	6·42	1752·9	18·95	447·4	18·80	861·0	1·30	672·4	13·16
27·2	—	47·5	—	81·6	—	37·8	—	58·8	—	40·3	·39	27·4	—	58·1	—	37·1	·11
50·9	—	139·0	—	47·1	—	102·8	—	88·6	—	117·6	—	108·5	—	104·4	—	42·3	—
24·9	·59	14·8	—	39·3	—	24·1	—	25·4	—	14·6	—	11·1	—	58·1	—	10·5	—
5·3	1·19	4·1	·69	6·8	—	6·5	1·55	7·8	1·35	7·1	1·58	3·4	·43	18·3	3·92	4·1	·97
·6	—	—	—	·3	—	3·1	—	·7	—	—	—	—	—	1·3	—	·5	—
1·8	—	3·8	·69	2·4	·68	3·7	—	1·0	—	3·2	—	1·7	·43	6·5	·65	2·5	—
110·7	1·78	208·2	1·38	177·5	·68	178·0	1·55	182·3	1·35	182·8	1·97	152·1	·86	246·7	4·57	97·0	1·08
18·3	1·78	23·4	4·47	19·0	2·37	28·5	7·12	31·5	4·06	40·7	11·45	15·8	2·56	22·2	—	14·0	3·13
19·5	—	18·6	—	15·9	—	21·4	—	18·6	—	16·6	—	12·4	—	9·1	—	17·3	—
10·7	—	11·7	—	13·9	—	12·7	—	15·9	—	13·4	—	2·6	—	5·9	—	4·9	—
·6	—	·7	—	1·0	—	·9	—	2·4	—	·4	—	—	—	0·7	—	0·1	—
18·9	·59	10·	1·03	20·7	1·01	10·5	·62	20·6	1·02	16·2	·79	8·1	1·28	32·0	·65	14·3	·43
18·9	—	22·7	—	15·2	—	18·6	—	15·6	—	13·0	—	13·2	—	15·7	—	5·8	—
—	—	—	—	—	—	·6	—	2·7	—	·4	—	—	—	—	—	—	—
46·7	—	65·0	2·41	68·4	1·69	69·7	2·78	79·2	1·35	80·5	2·37	54·3	2·56	70·5	1·96	105·5	9·17
287·0	2·36	336·5	8·26	266·3	6·77	201·9	4·64	326·8	8·12	367·5	11·84	318·4	9·40	408·0	2·61	265·4	8·47
101·8	—	141·4	—	118·9	—	116·4	—	111·3	—	59·6	—	102·6	—	89·4	—	18·0	—
10·7	—	12·0	—	7·4	—	11·8	—	19·6	—	5·5	—	5·6	—	24·8	—	3·3	—
11·8	·59	9·0	·69	17·3	·34	9·9	·31	14·9	—	8·3	—	8·5	—	13·0	·65	3·5	—
12·4	—	24·1	—	16·2	—	13·3	—	18·3	—	6·7	—	7·7	—	11·7	—	9·1	—
3·6	—	5·2	·34	9·1	—	7·4	—	9·1	—	1·6	—	3·4	·43	5·2	·65	3·5	—
20·1	—	25·8	—	16·2	—	20·7	—	25·7	—	15·4	—	7·7	—	11·1	—	7·5	—
82·2	—	79·5	—	62·7	—	106·2	—	105·5	—	65·5	—	32·9	—	62·0	—	24·5	—
45·0	—	46·5	—	35·6	·54	33·7	—	38·9	·34	70·7	·79	46·2	·43	42·4	—	63·2	·54
2·4	—	5·2	·34	3·4	—	4·0	·62	7·1	·68	11·1	—	2·1	2·13	—	—	1·7	·32
—	·59	·3	·69	—	·68	—	—	·7	1·02	—	—	—	·86	—	7·84	—	1·19
88·2	·59	109·4	1·03	100·3	·68	98·1	1·86	136·7	3·38	82·5	1·58	64·1	·86	77·7	·65	35·5	1·08
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12·4	5·50
—	—	1·7	—	·7	—	1·6	—	1·0	—	·8	—	·9	—	—	—	1·3	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1946·2	14·79	2382·7	26·15	1565·0	21·00	1897·8	23·53	2232·4	27·74	2812·1	49·74	1306·0	40·17	2009·1	20·88	1380·2	44·01

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ABSTRACT No. XVII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the BENGAL COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the four quarters of the year 1880.

Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Presidency -	Dum-Dum -	1	—	—	—	—	—	—	—	1	—
Allahabad -	Allahabad -	1	—	—	—	—	—	1	—	2	—
	Fort Allahabad	—	—	1	—	—	—	—	—	1	—
	Dinapore -	—	—	1	1	1	—	2	—	4	1
	Benares -	1	—	5	3	1	1	—	—	7	4
	Chunar -	—	—	—	—	1	—	1	—	2	—
	Cawnpore -	2	—	1	1	2	2	—	—	5	3
Oudh - -	Lucknow -	1	—	18	11	8	1	4	2	31	14
	Fyzabad -	—	—	—	—	1	—	1	—	2	—
	Sitapur -	—	—	—	—	—	—	11	4	11	4
Rohilcund -	Bareilly -	3	—	9	3	1	—	—	—	13	3
	Shahjahanpur	2	—	5	3	1	—	—	—	8	3
	Moradabad -	1	—	14	1	—	—	—	—	15	1
	Ranikhet -	—	—	26	5	5	—	2	—	33	5
	Choubuttia -	—	—	15	—	—	—	—	—	15	—
Saugor - -	Jubbulpore -	1	—	—	—	—	—	—	—	1	—
	Saugor - -	1	—	1	—	—	—	3	2	5	2
Gwalior - -	Morar - -	—	—	—	—	2	—	3	2	5	2
Meerut - -	Meerut - -	—	—	1	1	—	—	1	—	2	1
	Fatehgarh -	1	—	—	—	—	—	—	—	1	—
	Agra - -	2	—	—	—	1	1	3	—	6	1
	Muttra - -	1	1	1	—	—	1	—	—	2	2
	Delhi - -	1	—	2	1	—	—	1	1	4	2
	Roorkee -	—	—	—	—	—	—	1	—	1	—

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Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Sirhind	Umballa	4	1	3	1	—	—	4	1	11	3
	Jullundur	4	1	1	—	—	—	2	—	7	1
	Subathu	—	—	1	1	1	—	—	1	2	2
	Dagshai	—	—	1	1	9	2	4	4	14	7
Lahore	Meean Meer	—	1	—	—	1	—	—	2	1	3
	Ferozepore	2	—	—	—	—	—	—	—	2	—
	Mooltan	—	—	1	1	1	1	—	—	2	2
Rawal Pindi	Rawal Pindi	—	—	3	—	3	1	2	2	8	3
	Sialkot	1	—	4	2	—	—	—	—	5	2
	Campbellpore	—	—	—	—	1	1	—	—	1	1
	Fort Attock	—	—	—	—	2	—	—	—	2	—
	Khyra Gully	—	—	—	—	—	—	—	1	—	1
	Lawrencepore	—	—	—	—	1	1	—	—	1	1
Peshawur	Peshawur	—	—	1	1	2	1	—	2	3	4
	Nowshera	3	—	10	4	6	5	2	1	21	10
	Cherat	—	—	—	—	9	2	—	—	9	2
Hill Depôts	Kasaali	—	—	1	1	—	—	—	—	1	1
	Murree	—	—	1	—	—	—	—	—	1	—
	Troops on the march	—	—	2	2	1	—	7	1	10	3
	Total	33	4	129	44	61	20	55	26	278	94
	Frontier Field Force	3	2	34	15	41	22	12	7	90	40

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ABSTRACT No. XVIII.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the STATIONS in the BENGAL COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the four quarters of the year 1880.

Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Allahabad	Allahabad	—	—	—	—	37	28	—	—	37	28
	C.C. near Allahabad.	—	—	—	—	20	14	—	—	20	14
	Fort Allahabad	—	—	—	—	2	2	—	—	2	2
	Dinapore	—	—	2	1	—	—	—	—	2	1
	Chunar	—	—	—	—	1	1	1	—	2	1
	Cawnpore	—	—	1	1	10	6	—	—	11	7
Oudh	Lucknow	—	—	2	2	27	15	1	—	30	17
	C.C. near Lucknow.	—	—	6	4	—	—	18	15	24	19
	Fyzabad	—	—	1	—	—	—	2	1	3	1
	Sitapur	—	—	—	—	3	1	—	—	3	1
Rohilcund	Shahjahanpur	—	—	—	—	3	2	—	—	3	2
	Moradabad	—	—	—	—	11	8	—	—	11	8
Saugor	Jubbulpore	—	—	—	—	1	—	—	—	1	—
Gwalior	Morar	—	—	—	—	3	—	2	2	5	2
	Fortress Gwalior.	—	—	—	—	1	1	—	—	1	1
Meerut	Agra	—	—	4	4	—	—	—	—	4	4
Rawul Pindi	Rawul Pindi	—	—	—	—	1	1	1	—	2	1
Peshawur	Peshawur	—	—	—	—	4	4	6	4	10	8
	Nowshera	—	—	—	—	1	1	—	—	1	1
	Troops on the March.	—	—	—	—	31	24	10	10	41	34
	Total	—	—	16	12	156	108	41	32	213	152
	Frontier Field Force.	—	—	—	—	1	—	21	14	22	14

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ABSTRACT No. XIX.—TABLE. taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE of DYSENTERY, DIARRHŒA, and HEPATITIS in each of the DIVISIONS in the BENGAL COMMAND.

Divisions.	Presidency.		Allahabad.		Oudh.		Rohilcund.		Saugor.		Gwalior.		Meerut.		Sirhind.		Lahore.		Rawal Pindi.		Peshawar.		Troops on the March.		Hill Depôts.		Total of Command.		Field Service.	
Strength.	1,709		3,442		2,471		2,234		980		1,690		2,906		2,952		3,230		2,956		2,533		2,340		1,532		30,975		9,271	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Dysentery -	64	1	127	2	130	4	105	2	26	1	56	—	164	14	94	8	64	8	198	12	222	15	251	11	50	—	1,551	78	646	37
Diarrhœa -	64	—	177	—	146	—	113	—	46	—	145	2	265	2	162	3	201	3	328	2	352	9	363	10	176	—	2,538	31	1,047	19
Hepatitis and Abscess of Liver -	31	2	104	4	75	4	42	2	39	—	88	2	110	6	114	5	51	4	90	8	61	2	32	1	117	2	954	42	163	15
Total -	159	3	408	6	351	8	260	4	111	1	289	4	539	22	370	16	316	15	616	22	635	26	646	22	343	2	5,043	151	1,856	71

Ratio per 1,000 of Mean Strength.

Dysentery -	37·4	·59	36·9	·58	52·6	1·62	47·0	·90	26·6	1·02	33·1	—	56·4	4·82	31·8	2·71	19·8	2·48	67·0	4·06	87·6	5·92	107·3	4·70	32·6	—	50·1	2·52	69·7	3·99
Diarrhœa -	37·4	—	51·4	—	59·1	—	50·6	—	46·9	—	85·8	1·18	91·2	·69	54·9	1·02	62·2	·93	111·0	·68	139·0	3·55	155·1	4·27	114·9	—	81·9	1·00	112·9	2·05
Hepatitis and Abscess of Liver -	18·2	1·17	30·2	1·16	30·3	1·62	18·8	·90	39·8	—	52·1	1·18	37·9	2·06	38·6	1·69	15·8	1·23	30·4	2·70	24·1	·79	13·7	·43	76·4	1·31	30·3	1·35	17·6	1·62
Total -	93·0	1·76	118·5	1·74	142·0	3·24	116·4	1·79	113·3	1·02	171·0	2·36	185·5	7·57	125·3	5·42	97·8	4·64	208·4	7·44	250·7	10·26	276·1	9·40	223·9	1·31	162·8	4·87	200·2	7·66

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ABSTRACT No. XX.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE and MORTALITY in the BENGAL COMMAND, due to DYSENTERY, DIARRHŒA, and HEPATITIS, in each Quarter of the Year 1880.

—	Dysentery.				Diarrhœa.				Hepatitis (including Abscess of Liver).				Total.			
	Number.		Ratio per 1,000 of Strength.		Number.		Ratio per 1,000 of Strength.		Number.		Ratio per 1,000 of Strength.		Number.		Ratio per 1,000 of Strength.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1st Quarter - -	183	3	6·4	·10	286	1	9·9	·04	203	11	7·1	·38	672	15	23·4	·52
2nd „ - -	316	10	11·1	·35	474	2	16·6	·07	220	9	7·7	·32	1,010	21	35·4	·74
3rd „ - -	508	20	16·3	·64	884	6	28·4	·19	269	9	8·6	·29	1,661	35	53·3	1·12
4th „ - -	544	45	15·4	1·27	894	22	25·2	·62	262	13	7·4	·37	1,700	80	48·0	2·26
Total - -	1,551	78	50·1	2·52	2,538	31	81·9	1·00	954	42	30·8	1·35	5,043	151	162·8	4·87

FIELD SERVICE.

1st Quarter - -	86	5	7·3	·43	99	—	8·4	—	58	6	5·0	·51	243	11	20·7	·94
2nd „ - -	231	5	18·0	·39	379	1	29·6	·08	51	—	4·0	—	661	6	51·6	·47
3rd „ - -	245	23	24·8	2·33	464	13	47·0	1·32	41	7	4·2	·71	750	43	76·0	4·36
4th „ - -	84	4	31·3	1·49	105	5	39·2	1·86	13	2	4·8	·75	202	11	75·3	4·10
Total - -	646	37	69·7	3·99	1,047	19	112·9	2·05	163	15	17·6	1·62	1,856	71	200·2	7·66

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ABSTRACT No. XXI.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the COMPARATIVE MORTALITY and INVALIDING in the THREE GRADES of COMMISSIONED OFFICERS, NON-COMMISSIONED OFFICERS, and PRIVATES during the Year under Report, and for the Ten previous Years in the BENGAL COMMAND:—

Years.	Average Strength.			Number of Deaths.			Invalided.			Ratio per 1,000.					
										Deaths.			Invalids.		
	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.
1870 - - -	1,514	3,420	30,985	31	108	639	93	161	1,243	20·48	31·58	20·62	61·43	47·08	40·12
1871 - - -	1,424	3,395	32,156	25	68	568	114	145	1,383	17·56	20·03	17·66	80·06	42·71	43·01
1872 - - -	1,376	3,460	33,319	20	131	864	93	185	1,371	14·53	37·86	25·93	67·59	53·47	41·15
1873 - - -	1,371	2,777	34,397	20	82	482	97	174	1,255	14·59	29·53	14·01	70·75	62·66	36·49
1874 - - -	1,443	3,815	33,836	23	65	477	64	148	1,235	15·94	17·04	14·10	44·35	38·79	36·50
1875 - - -	1,485	3,842	34,053	10	96	544	75	142	1,189	6·73	24·99	15·98	50·51	36·96	34·92
1876 - - -	1,735	3,820	33,417	39	95	503	96	178	1,257	22·48	24·87	15·05	55·33	46·60	37·62
1877 - - -	2,066	3,787	32,761	29	57	357	83	136	1,162	14·04	15·05	10·90	40·17	35·91	35·47
1878 - - -	2,018	3,782	32,374	28	86	694	79	141	1,300	13·88	22·74	21·44	39·15	37·28	40·16
1879 - - -	2,010	4,266	34,615	74	183	1,444	124	204	1,437	36·82	42·90	41·72	61·69	47·82	41·51
Average for 10 years -	1,644	3,636	33,191	29·90	97·10	657·20	91·80	161·40	1283·20	18·19	26·71	19·80	55·84	44·39	38·66
1880 - - -	1,699	5,369	42,797	31	149	1,085	95	220	1,819	18·25	27·75	25·35	55·92	40·98	42·50
1880 { Killed in action and died from wounds received in battle - - - }				5	12	39	—	—	—	2·94	2·24	0·91	—	—	—
1880 { Number of deaths, excluding those killed in action and died from wounds received in battle - - - }				26	137	1,046	—	—	—	15·30	25·52	24·44	—	—	—

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ABSTRACT No. XXII.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS into stationed in the MADRAS PRESIDENCY during the year 1880, with the Ratios

Orders.	Average Strength, 10,280. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	8	—	—	—	—	—	·51
	Continued „	1,069	13	—	13	—	—	34·66
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	3,563	3	—	3	12	—	82·92
	Cholera	1	1	—	1	—	—	—
	Other diseases	34	1	—	1	—	—	·83
	Total	4,675	18	—	18	12	—	118·92
	Constitutional Group.							
	Rheumatism	327	—	—	—	5	4	16·83
	Primary Syphilis	1,106	—	—	—	1	—	85·83
	Secondary „	260	1	—	1	9	7	23·08
	Tubercular diseases	75	5	4	9	21	15	10·67
	Scurvy and Purpura	1	—	—	—	—	—	·09
	Other diseases	34	—	—	—	5	1	3·83
	Total	1,803	6	4	10	41	27	140·33
	II.—*Local Diseases.* Diseases of the—							
1	Nervous System	154	16	—	16	22	3	9·76
2	Eye	165	—	—	—	3	4	9·26
3	Ear	101	—	—	—	—	4	3·33
4	Nose	5	—	—	—	—	—	·25
5	Circulatory System	183	12	—	12	42	31	14·92
6	Absorbent „	318	—	—	—	—	—	37·00
7	Ductless Glands	1	—	—	—	—	—	·08
8	Respiratory System	360	6	1	7	8	6	17·67
9	Digestive „	2,378	26	3	29	49	38	104·08
10	Urinary System — Gonorrhœa	1,109	—	—	—	—	—	69·50
	Urinary System — Sequelæ of Gonorr.	145	—	—	—	—	2	7·08
	Urinary System — Other diseases	96	1	—	1	2	1	6·33
11	Generative System	147	—	—	—	—	—	4·92
12	Organs of Locomotion	75	—	—	—	6	2	4·92
13	Cellular Tissue	172	—	—	—	1	2	5·58
14	Cutaneous System	797	—	—	—	3	1	33·83
	III.—*Debility*	371	—	—	—	43	42	20·33
	IV.—*Poisons*	28	3	—	3	—	—	1·00
	V.—*Injuries.*							
1	General	2	5	—	5	1	—	·08
2	Local	986	7	—	7	5	8	37·75
3	In action	—	—	—	—	—	—	—
	No appreciable disease	13	—	—	—	—	—	·33
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	14,084	100	8	108	238	171	647·25
	Average for 10 years, 1870-79	—	—	—	—	—	—	—

* The average ratios for 10 years will be given in future years. The ratios for the two years 1879 to 1880

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HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK among the TROOPS per 1,000 of the Strength, and the Average Ratios for 10 Years.*

Ratio per 1,000.					Ratio per 1,000, for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
·8	--	—	—	·05	·4	—	—	—	—
104·0	1·26	—	—	3·37	131·5	1·71	—	—	4·38
—	—	—	—	—	—	—	—	—	—
346·6	·29	1·17	—	8·07	265·8	·57	·57	—	7·14
·1	·10	—	—	—	3·4	2·19	—	—	·09
3·3	·10	—	—	·08	3·3	—	—	—	·09
454·8	1·75	1·17	—	11·57	404·4	4·47	·57	—	11·70
31·8	—	·49	·39	1·64	29·6	·09	1·52	1·15	1·52
107·6	—	·10	—	8·35	113·3	—	—	—	8·85
25·3	·10	·87	·68	2·24	24·0	·09	1·62	·85	1·91
7·3	·87	2·04	1·46	1·04	6·3	1·15	2·28	2·28	·86
·1	—	—	—	·01	·4	—	—	—	·09
3·3	—	·49	·10	·37	5·4	—	·67	·19	·48
175·4	·97	3·99	2·63	13·65	179·0	1·33	6·09	4·47	13·71
15·0	1·56	2·14	·29	·95	20·6	2·19	4·09	1·05	1·24
16·1	—	·29	·39	·90	17·0	—	·67	·57	·76
9·8	—	—	·39	·32	11·7	—	·19	·48	·38
·5	—	—	—	·02	·5	—	—	—	—
17·8	1·17	4·08	3·02	1·45	19·8	·95	4·57	2·66	1·24
30·9	—	—	—	3·60	28·0	—	—	—	2·76
·1	—	—	—	·01	—	—	—	—	—
35·0	·68	·78	·58	1·72	36·8	·57	1·33	1·52	1·71
231·3	2·82	4·77	3·70	10·12	300·6	5·52	14·37	2·85	13·90
107·9	—	—	—	6·76	95·4	—	—	—	5·42
14·1	—	—	·19	·69	13·1	—	·48	·19	1·05
9·3	·10	·19	·10	·62	7·4	·48	·38	·09	·29
14·3	—	—	—	·48	12·7	—	—	—	·57
7·3	—	·58	·19	·48	4·1	·09	·48	·29	·38
16·7	—	·10	·19	·54	19·4	—	—	--	·76
77·5	—	·29	·10	3·29	77·8	--	·19	·29	3·04
36·1	—	4·18	4·08	1·98	43·9	—	10·47	6·57	2·38
2·7	·29	—	—	·10	2·6	·19	—	—	·09
·2	·49	·10	—	·01	·4	1·24	—	—	—
95·9	·68	·49	·78	3·67	106·6	·67	·57	1·15	3·81
—	—	—	—	—	--	—	—	—	—
1·3	—	—	—	·03	·8	—	—	—	—
—	—	—	—	—	—	—	—	—	—
1370·0	10·51	23·15	16·63	62·96	1402·6	17·70	44·45	22·18	65·19
1222·5	18·97	45·02	17·57	57·61	—	—	—	—	—

will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. XXIII. — TABLE showing the AVERAGE STRENGTH, AVERAGE CONSTANTLY SICK, ADMISSIONS, DEATHS, and INVALIDS at the different STATIONS and CIRCLES in the MADRAS COMMAND, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER.

Stations.	Average Strength.	Average constantly Sick.	Admitted.	Died in and out of Hospital.	Invalided.	Ratio per 1,000 of Strength.					
						Average constantly Sick.	Admitted.	Died (in and out).	Invalided.	Average of previous Period of 10 Years.	
										Admitted.	Died.
CENTRE AND NORTHERN DISTRICTS:											
Madras - -	465	36	639	4	14	77·42	1374·19	8·60	30·11	1307·01	17·62
St. Thomas' Mount	344	30	564	5	7	87·21	1639·53	14·54	20·35	1271·64	20·64
Total -	809	66	1,203	9	21	81·58	1487·02	11·12	25·96	—	—
SOUTHERN MALABAR AND CANARA DISTRICTS:											
Cannanore - -	481	22	424	2	6	45·74	881·50	4·15	12·47	1291·59	15·29
Calicut - -	100	4	57	—	1	40·00	570·00	—	10·00	1032·69	18·13
Malliaporum -	93	2	71	—	—	21·51	763·44	—	—	917·02	16·31
Total -	674	28	552	2	7	41·54	818·99	2·97	10·39	—	—
MYSORE DIVISION AND CEDED DISTRICT:*											
Bangalore - -	1,258	108	1,677	7	30	85·85	1333·07	5·56	23·85	1255·90	11·83
Bellary - -	376	42	1,035	5	6	111·70	2752·66	13·30	15·96	1316·70	10·13
Total -	1,634	150	2,712	12	36	91·80	1659·73	7·34	22·03	—	—
H. S. F. AND HYDERABAD CONTINGENT:											
Secunderabad -	2,530	171	3,205	20	24	67·59	1266·80	7·90	9·48	1248·93	20·30
NAGPORE FORCE AND CENTRAL INDIA REGIMENTS:											
Kamptee - -	770	55	1,383	17	6	71·43	1796·10	22·08	7·79	1617·49	14·87
Seetabuldee -	48	3	143	—	—	62·50	2979·16	—	—	1664·79	6·16
Total -	818	58	1,526	17	6	70·90	1865·52	20·80	7·33	—	—

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ABSTRACT No. XXIII.—*continued.*

Stations.	Average Strength.	Average constantly Sick.	Admitted.	Died in and out of Hospital.	Invalided.	Ratio per 1,000 of Strength.				Average of previous Period of 10 Years.	
						Average constantly Sick.	Admitted.	Died (in and out).	Invalided.	Admitted.	Died.
BRITISH BURMAH DIVISION:											
Rangoon - -	715	58	1,763	3	25	81·12	2465·73	4·20	34·96	1154·80	15·83
Thayetmyo - -	1,093	54	1,108	6	38	49·40	1013·72	5·50	34·77	1167·52	22·86
Tomegoo - -	453	20	394	3	9	44·15	869·76	6·62	19·87	983·09	16·18
Tayrangoon -	295	8	176	4	8	27·12	596·61	13·56	27·12	96·89	1·41
Port Blair - -	129	7	199	—	2	54·26	1542·63	—	15·50	762·19	10·90
Total -	2,685	147	3,640	16	82	54·75	1355·68	5·95	30·54	—	—
TROOPS TREATED AT CONVALESCENT DEPÔTS AND OTHER HOSPITALS:											
Poonamallee -	178	24	351	4	6	134·83	1971·91	22·47	33·71	2499·90	56·37
Wellington -	517	35	579	7	7	67·69	1119·92	13·54	13·54	1338·69	17·29
Elsewhere - -	239	—	—	—	49	—	—	—	—	—	—
Total -	934	59	930	11	62	63·17	995·72	11·78	66·38	—	—
ON THE MARCH -	196	8	143	13	—	40·82	729·59	66·32	—	658·01	47·98

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ABSTRACT No. XXIV.—TABLE, taken from the REPORT of the PRINCIPAL MEDICAL in each of the MILITARY DIVISIONS in the MADRAS

Orders.	Military Divisions.	Centre and Northern Districts.		Southern Malabar and Canara Districts.		Mysore Division and Ceded Districts.		H. S. F. and Hyderabad Contingent.		Nagpore Force and Central Indian Regiments.		British Burmah Division.		Depôts.		On the March.	
	Average Strength - -	809		674		1,634		2,530		818		2,685		695		196	
	Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	I. *General Diseases.*																
	Febrile group—																
	Eruptive Fevers - -	—	—	—	—	5	—	1	—	1	—	1	—	—	—	—	—
	Continued „ - -	110	—	31	—	267	—	339	6	57	6	270	1	6	—	11	—
	Yellow Fever - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Paroxysmal Fevers -	29	—	46	—	547	—	270	1	897	1	1,444	1	274	—	49	—
	Cholera - - -	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—
	Other Diseases - -	3	—	1	—	6	—	6	1	6	—	4	—	3	—	—	—
	Total of Febrile group -	142	—	78	—	825	—	586	8	961	7	1,720	3	283	—	60	—
	Constitutional group—																
	Rheumatism - -	31	—	19	—	62	—	101	—	18	—	42	—	40	—	—	—
	Primary syphilis - -	128	—	49	—	383	—	317	—	43	—	112	—	38	—	10	—
	Secondary „ - -	19	—	5	—	85	—	94	—	6	1	22	—	32	—	3	—
	Tubercular diseases -	2	—	—	—	26	—	13	—	9	1	13	—	10	2	—	2
	Scurvy and Purpura -	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
	Other Diseases - -	2	—	2	—	26	—	—	—	—	—	1	—	1	—	—	—
	Total of constitutional group - - -	182	—	75	—	582	—	525	—	76	2	191	—	121	2	13	2
	II. *Local Diseases.*																
	Diseases of the—																
1	Nervous System - -	17	2	4	—	26	4	16	2	27	4	45	1	15	—	1	3
2	Eye - - - -	18	—	—	—	35	—	54	—	9	—	41	—	8	—	—	—
3	Ear - - - -	20	—	7	—	18	—	34	—	7	—	14	—	2	—	—	—
4	Nose - - -	—	—	—	—	3	—	—	—	2	—	—	—	—	—	—	—
5	Circulatory System -	21	2	5	1	47	—	30	3	5	1	56	3	17	2	2	—
6	Absorbent „ -	28	—	8	—	72	—	124	—	17	—	41	—	21	—	3	—
7	Ductless Glands - -	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
8	Respiratory System -	31	2	13	—	53	—	79	1	27	—	117	1	28	1	4	1
9	Digestive „ -	250	3	153	1	327	4	704	2	142	3	509	5	244	5	33	3
10	Urinary „ -	171	—	70	—	265	1	454	—	90	—	198	—	54	—	9	—
11	Generative „ -	18	—	3	—	22	—	37	—	1	—	56	—	7	—	—	—
12	Organs of Locomotion -	10	—	1	—	18	—	20	—	10	—	16	—	—	—	—	—
13	Cellular Tissue - -	23	—	13	—	40	—	27	—	13	—	46	—	6	—	—	—
14	Cutaneous System -	119	—	54	—	147	—	173	—	61	—	168	—	46	—	2	—
	III. *Debility* -	17	—	15	—	48	—	53	—	19	—	183	—	25	—	8	—
	IV. *Poisons* -	1	—	1	—	3	—	9	1	2	—	9	1	2	1	—	—
	V. *Injuries.*																
1	General - - -	—	—	—	—	1	2	—	—	—	—	1	1	—	—	—	2
2	Local - - -	133	—	52	—	185	1	297	3	57	—	222	1	45	—	8	2
3	In action - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	No appreciable Disease -	2	—	—	—	—	—	2	—	—	—	2	—	6	—	—	—
	Cause unknown - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Total - - -	1,203	9	552	2	2,712	12	3,205	20	1,526	17	3,640	16	930	11	143	13

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OFFICER, showing the PREVALENCE and MORTALITY of the different Classes of DISEASES COMMAND, with the Ratios per 1,000 of the Strength.

Centre and Northern Districts.		Southern Malabar and Canara Districts.		Mysore Division and Ceded Districts.		H. S. F. and Hyderabad Contingent.		Nagpore Force and Central Indian Regiments.		British Burmah Division.		Depôts.		On the March.	
Ratio per 1,000 of Strength.															
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
—	—	—	—	3·06	—	·40	—	1·22	—	·37	—	—	—	—	—
135·97	—	45·99	—	163·40	—	122·14	2·37	69·68	7·34	100·56	·37	8·63	—	56·12	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35·85	—	68·25	—	334·76	—	106·72	·40	1096·58	1·22	537·80	·37	394·24	—	250·00	—
—	—	—	—	—	—	—	—	—	—	·37	·37	—	—	—	—
3·71	—	1·48	—	3·67	—	2·37	·40	7·34	—	1·49	—	4·32	—	—	—
175·53	—	115·73	—	504·89	—	231·62	3·17	1174·82	8·56	640·59	1·12	407·19	—	306·12	—
38·32	—	28·19	—	37·94	—	39·92	—	22·01	—	15·64	—	57·55	—	—	—
158·22	—	72·70	—	234·39	—	125·30	—	52·57	—	41·71	—	54·68	—	51·02	—
23·48	—	7·42	—	52·02	—	37·15	—	7·34	1·22	8·19	—	46·04	—	15·31	—
2·47	—	—	—	15·91	—	5·14	—	11·00	1·22	4·84	—	14·39	2·88	—	10·20
—	—	—	—	—	—	—	—	—	—	·37	—	—	—	—	—
2·47	—	2·97	—	15·91	—	—	—	—	—	·37	—	1·44	—	—	—
224·98	—	111·28	—	356·18	—	207·51	—	92·92	2·44	71·13	—	174·10	2·88	66·33	10·20
21·01	2·47	5·93	—	15·91	2·45	6·32	·79	33·01	4·89	16·76	·37	21·58	—	5·10	15·31
22·25	—	—	—	21·42	—	21·34	—	11·00	—	15·27	—	11·51	—	—	—
24·72	—	16·38	—	7·96	—	13·44	—	8·56	—	5·22	—	2·88	—	—	—
—	—	—	—	1·84	—	—	—	2·44	—	—	—	—	—	—	—
25·96	2·47	7·42	1·48	28·76	—	11·85	1·18	6·11	1·22	20·86	1·12	24·46	2·88	10·20	—
34·61	—	11·87	—	44·06	—	49·01	—	20·78	—	15·27	—	30·22	—	15·31	—
—	—	—	—	—	—	·40	—	—	—	—	—	—	—	—	—
38·32	2·47	19·28	—	32·44	—	31·23	·40	33·01	—	43·55	·37	40·29	1·44	20·41	5·10
309·02	3·71	227·00	1·48	200·12	2·45	278·26	·79	173·59	3·67	189·57	1·86	351·08	7·20	168·36	15·31
211·37	—	103·86	—	162·18	·61	171·54	—	110·02	—	73·74	—	77·70	—	45·92	—
22·25	—	4·45	—	13·46	—	14·62	—	1·22	—	20·86	—	10·07	—	—	—
12·36	—	1·48	—	11·02	—	7·92	—	12·22	—	5·96	—	—	—	—	—
28·43	—	19·28	—	24·48	—	10·67	—	15·89	—	17·13	—	8·63	—	—	—
147·09	—	80·12	—	89·96	—	68·37	—	74·57	—	62·57	—	66·19	—	10·20	—
21·01	—	22·26	—	29·38	—	20·95	—	23·23	—	70·02	—	35·97	—	40·82	—
1·23	—	1·48	—	1·84	—	3·56	·40	2·44	—	3·35	·37	2·88	1·44	—	—
—	—	—	—	·61	1·22	—	—	—	—	·37	·37	—	—	—	10·20
16·40	—	77·16	—	113·22	·61	117·40	1·18	69·68	—	82·70	·37	64·75	—	40·82	10·20
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·47	—	—	—	—	—	·80	—	—	—	·75	—	8·63	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1487·02	11·12	818·99	2·97	1659·73	7·34	1266·89	7·91	1865·52	20·80	1355·68	5·95	1338·13	15·83	729·59	66·32

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ABSTRACT No. XXV.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the MADRAS COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the four quarters of the year 1880.

Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Bellary - -	—	—	—	—	—	—	1	—	1	—
Secunderabad -	2	1	4	2	6	3	1	—	13	6
Kamptee - -	—	—	1	1	9	3	—	—	10	4
Tayrangoon -	—	—	1	—	—	1	—	—	1	1
Total -	2	1	6	3	15	7	2	—	25	11

ABSTRACT No. XXVI.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the MADRAS COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the four quarters of the year 1880.

Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
British Burmah - Division -	Tayrangoon	—	—	—	—	—	—	1	1	1	1
	Total -	—	—	—	—	—	—	1	1	1	1

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ABSTRACT No. XXVII.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the prevalence of DYSENTERY, DIARRHŒA, and HEPATITIS in each of the DIVISIONS in the MADRAS COMMAND for 1880:—

Circles.	Centre and Northern Districts.		Southern Malabar and Canara Districts.		Mysore Division and Ceded Districts.		H. S. F. and Hyderabad Contingent.		Nagpore Force and Central India Regiments.		British Burmah Division.		Depôts.		On the March and elsewhere.		Total.	
Strength.	809		674		1,634		2,530		818		2,685		695		435		10,280	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Dysentery - - -	21	—	26	—	45	1	163	—	26	1	99	1	75	2	22	—	477	5
Diarrhœa - - -	47	1	29	—	63	—	132	—	43	—	99	1	18	—	10	—	441	2
Hepatitis and Abscess of Liver	68	2	20	1	37	2	89	2	21	—	110	3	56	2	4	2	405	14
Total - -	136	3	75	1	145	3	384	2	90	1	308	5	149	4	36	2	1,323	21
Ratio per 1,000 of Strength.																		
Dysentery - - -	26·0	—	38·6	—	27·5	·61	64·4	—	31·8	1·22	36·9	·37	107·9	2·88	50·6	—	46·4	·49
Diarrhœa - - -	58·1	1·24	43·0	—	38·6	—	52·2	—	52·5	—	36·9	·37	25·9	—	23·0	—	42·9	·19
Hepatitis and Abscess of Liver	84·0	2·47	29·7	1·48	22·6	1·22	35·2	·79	25·7	—	40·9	1·12	80·6	2·88	9·2	4·60	39·4	1·36
Total - -	168·1	3·71	111·3	1·48	88·7	1·83	151·8	·79	110·0	1·22	114·7	1·86	214·4	5·76	82·8	4·60	128·7	2·04

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ABSTRACT No. XXVIII.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the PREVALENCE and MORTALITY in the MADRAS COMMAND, due to DYSENTERY, DIARRHŒA, and HEPATITIS, in each Quarter of the Year 1880.

—	Dysentery.				Diarrhœa.				Hepatitis (including Abscess of the Liver).				Total.			
	Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1st Quarter - -	126	1	12·56	·10	107	1	10·65	·10	102	4	10·17	·40	335	6	33·38	·60
2nd „ - -	92	2	9·25	·20	106	1	10·66	·10	112	6	11·27	·60	310	9	31·18	·90
3rd „ - - -	143	2	14·09	·20	114	—	11·23	—	99	2	9·75	·20	356	4	35·07	·40
4th „ - - -	116	—	10·55	—	114	—	10·37	—	92	2	8·37	·19	322	2	29·29	·19
Total for Year -	477	5	46·40	·49	441	2	42·90	·19	405	14	39·40	1·36	1,323	21	128·70	2·04

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ABSTRACT No. XXIX.—TABLE showing the ADMISSIONS, MORTALITY, and INVALIDING in each CORPS serving in the MADRAS COMMAND, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER.

Corps.	Average Annual Strength.	Admitted into Hospital.	Deaths in the Command.	Invalided.	Average constantly Sick.	Ratio per 1,000 of Strength.				Sick to each Soldier.	Average Duration of each Case of Sickness.	Stations occupied during the Year.
						Admissions into Hospital.	Deaths.	Invalids.	Average constantly Sick.	Average Time		
												months
12th Lancers - - -	434	418	6	4	28·56	963·13	13·82	9·22	65·80	24·08	25·01	Secunderabad - - - - - - 12
14th Hussars - - -	450	498	3	14	32·01	1106·66	6·66	31·11	71·13	26·03	23·52	Bangalore - - - - - - - 12
Total - - -	884	916	9	18	60·57	1036·20	10·18	20·36	68·51	25·07	24·20	
B/B. Bde. Royal Horse Artillery	164	175	—	2	12·54	1067·07	—	12·20	76·46	26·00	26·23	Bangalore - - - - - - 12
C/B. „ „ -	152	199	1	5	12·71	1309·21	6·58	32·90	83·61	30·62	23·39	Secunderabad - - - - - - 12
L/1 „ Royal Artillery -	158	176	4	5	9·60	1113·92	25·31	31·65	60·76	22·24	19·97	On the march, 1½, and Secunderabad, 10½.
O/1 „ „ -	151	248	3	5	11·22	1642·38	19·87	33·11	74·30	27·19	16·55	Saint Thomas' Mount - - - - 12
I/3 „ „ -	157	227	1	5	14·33	1445·86	6·37	31·85	91·27	33·42	23·11	On the march, ½, and Bangalore, 11½.
I/6 „ „ -	157	291	2	3	17·24	1853·50	12·74	19·11	109·81	40·21	21·69	Saint Thomas' Mount - - - - 12
K/6 „ „ -	160	198	1	8	12·28	1237·50	6·25	50·00	76·75	28·11	22·71	Bangalore - - - - - - - 12
L/6 „ „ -	133	310	2	5	9·29	2330·83	15·04	37·59	69·85	25·50	10·94	Kamptee - - - - - - - 12
M/6 „ „ -	154	299	—	4	12·08	1941·56	—	25·97	78·44	28·70	14·78	Kamptee - - - - - - - 12
N/6 „ „ -	166	217	2	1	15·98	1307·23	12·05	6·02	96·26	35·24	26·96	Secunderabad - - - - - - 12

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Corps.	Average Annual Strength.	Admitted into Hospital.	Deaths in the Command.	Invalided.	Average constantly Sick.	Ratio per 1,000 of Strength.				Sick Time to each Soldier.	Average Duration of each Case of Sickness.	Stations occupied during the Year.
						Admissions into Hospital.	Deaths.	Invalids.	Average constantly Sick.			
												months.
O/6 Brigade, Royal Artillery -	162	439	4	4	19·10	2709·88	24·69	24·69	117·90	43·15	15·92	Bellary - - - - - - - 12
2/8 „ „ -	91	111	—	—	5·75	1219·78	—	—	63·19	23·14	18·98	Secunderabad - - - - - - 12
3/8 „ „ -	90	126	1	·6	7·91	1400·00	11·11	66·66	87·88	32·21	23·01	Tonghoo - - - - - - - 12
4/8 „ „ -	86	123	2	3	5·72	1430·23	23·26	34·88	66·51	24·35	17·02	Thayetmyo - - - - - - - 12
7/8 „ „ -	91	118	1	2	8·97	1296·70	10·99	21·98	98·57	36·10	27·84	Tonghoo - - - - - - - 12
8/8 „ „ -	7	2	—	—	·03	285·71	—	—	4·30	1·57	5·50	Embarked early in January 1880.
9/8 „ „ -	8	8	1	—	·18	1000·00	125·00	—	22·50	8·25	8·25	Embarked early in January 1880.
11/8 „ „ -	84	193	4	2	7·94	2297·62	47·62	23·81	94·52	34·59	15·06	Rangoon - - - - - - - 12
12/8 „ „ -	80	88	1	2	5·22	1100·00	12·50	25·00	65·25	23·88	21·72	Madras - - - - - - - 12
14/8 „ „ -	7	5	—	—	·10	714·28	—	—	14·28	5·14	7·20	Secunderabad, ½; on the march, ½; and embarked for England.
16/9 „ „ -	80	56	1	—	2·52	700·00	12·50	—	31·50	11·54	16·48	Thayetmyo - - - - - - - 12
19/9 „ „ -	91	131	1	6	7·93	1439·56	10·99	65·93	87·14	31·91	22·16	Saint Thomas' Mount and Madras - - - 12
Total - - -	2,429	3,740	32	68	198·64	1539·73	13·17	27·99	81·78	29·93	19·44	
Royal Engineers - -	49	20	—	4	1·00	408·16	—	81·63	20·41	7·45	18·25	Bangalore and elsewhere - - - - - 12

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Corps.	Average Annual Strength.	Admitted into Hospital.	Deaths in the Command.	Invalided.	Average constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.	Stations occupied during the Year.
						Admissions into Hospital.	Deaths.	Invalids.	Average constantly Sick.			
												months
2/13th Regiment - -	939	1,628	17	15	75·46	1733·76	18·10	15·97	80·36	29·41	16·96	Kamptee, 12 (and detachments at Seetabuldee, Bellary, Bangalore, and Madras).
2/16th „ - -	920	731	3	4	36·90	794·56	3·26	4·35	42·28	15·47	19·48	Secunderabad, 1; on the march, ½; and Cannonore, 10½ (detachment at Calicut and Malliaperam).
1/21st Fusiliers - - -	844	1,005	4	11	56·65	1190·76	4·74	13·03	67·12	24·57	20·63	Secunderabad - - - - - - - 12
2/24th Regiment - -	290	517	4	—	18·12	1782·76	13·79	—	62·48	22·87	12·83	Secunderabad - - - - - - - 4
43rd „ - - -	611	684	8	32	39·63	1119·47	13·09	52·37	64·86	23·74	21·21	Thayetmyo - - - - - - - 12
Left Wing, 43rd Regiment -	236	152	1	—	7·44	644·07	4·23	—	31·52	11·54	17·92	Tonghoo - - - - - - - 9½
44th Regiment - - -	329	761	7	22	36·14	917·97	8·44	26·54	43·59	15·96	17·40	Thayetmyo, 12, and detachment at Tayrangoon. 9½.
Left Wing, 44th Regiment -	68	43	—	—	1·75	632·35	—	—	25·73	9·45	14·95	Tonghoo, 3.
48th Regiment - - -	688	925	7	6	41·50	1344·48	10·17	8·72	60·32	22·08	16·42	Cannanore, ½; Secunderabad, 9½; and embarked for England.
Left Wing, 54th Regiment -	129	406	1	—	10·97	3147·29	7·75	—	85·04	31·12	9·89	Rangoon, 4½, and left for Calcutta.
67th Regiment - - -	206	422	2	32	21·26	2048·54	9·71	155·34	103·21	37·78	18·44	Detachment at Bangalore and head quarters joined 6 November 1880.
77th „ - - -	104	308	—	—	6·47	2961·54	—	—	62·21	13·48	7·70	Madras, 3, on the voyage and Rangoon, ½.
Wing, 77th Regiment - -	176	236	2	—	8·00	1340·91	11·36	—	45·45	28·15	12·41	Bellary, 3.
89th Regiment - -	878	1,590	3	26	55·92	1810·93	3·41	29·61	63·69	23·32	12·87	Rangoon, 12 (and detachment at Port Blair).
Total - - -	6,918	9,408	59	148	418·21	1359·93	8·53	21·39	60·45	22·13	16·27	

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ABSTRACT No. XXX.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL
THREE GRADES of COMMISSIONED OFFICERS, NON-COMMISSIONED OFFICERS, and

Years.	Average Strength.			Number of Deaths.		
	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.
1870 - - -	414	1,758	9,387	3	47	175
1871 - - -	444	1,699	9,428	4	40	174
1872 - - -	430	1,723	10,021	7	51	166
1873 - - -	422	1,785	10,181	6	24	187
1874 - - -	419	1,785	10,215	3	27	122
1875 - - -	398	1,698	9,779	11	32	131
1876 - - -	405	1,670	9,671	7	31	143
1877 - - -	454	1,700	9,641	6	46	142
1878 - - -	442	1,665	9,491	9	55	178
1879 - - -	433	1,660	9,744	3	33	140
Average for 10 years -	426	1,714	9,756	6	38	156
1880 - - -	473	1,611*	9,503*	5	8	92

* Including the strength of

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OFFICER at MADRAS, shows the comparative MORTALITY and INVALIDING in the PRIVATES, for the YEAR under REPORT and for the TEN previous YEARS.

Invalided.			Ratio per 1,000.					
			Deaths.			Invalids.		
Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.
53	57	770	7·25	26·73	18·64	128·02	32·42	82·03
58	51	401	9·01	23·54	18·45	130·63	13·01	42·53
37	44	392	16·28	29·60	16·56	86·05	26·12	89·11
37	42	367	14·22	13·44	18·37	87·68	23·53	36·05
33	48	555	7·16	15·12	11·94	78·76	26·89	54·33
38	61	532	27·64	18·84	13·39	95·48	35·92	54·89
34	65	413	17·28	18·56	14·79	83·95	38·92	42·70
33	63	447	13·22	27·05	14·73	72·69	37·59	46·35
29	57	441	20·36	33·03	18·75	65·61	34·23	46·46
26	62	405	6·93	19·88	14·36	60·05	37·35	41·56
38	55	472	14·09	22·17	15·99	89·20	32·09	48·38
40	12	226	10·57	4·96	9·68	84·56	7·45	23·78

the 67th Regiment at Kabul.

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ABSTRACT No. XXXI.—Table showing the Average Strength, Admissions Troops stationed in the Bombay Presidency during the Year 1880, with

Orders.	Average Strength, 9,200. Diseases.	Admissions into Hospital.	Deaths. In the Command.	Deaths. Of Invalids.	Deaths. Total.	Invalids. Number sent Home.	Invalids. Number finally Discharged the Service.	Average Number constantly Sick.*
	I.—*General Diseases.*							
	Febrile Group.							
	Eruptive Fevers	9	1	—	1	—	—	·37
	Continued „	1,370	37	—	37	—	—	34·17
	Yellow Fever	—	—	—	—	—	—	—
	Paroxysmal Fevers	8,974	31	1	32	165	—	189·74
	Cholera	—	—	—	—	—	—	—
	Other diseases	85	1	—	1	—	1	2·68
	Total	10,438	70	1	71	165	1	226·96
	Constitutional Group.							
	Rheumatism	362	2	1	3	17	5	17·00
	Primary Syphilis	850	1	—	1	—	—	49·43
	Secondary „	219	—	—	—	10	8	11·26
	Tubercular diseases	62	7	7	14	15	26	3·74
	Scurvy and Purpura	35	1	—	1	—	—	1·71
	Other diseases	81	1	—	1	6	3	4·09
	Total	1,600	12	8	20	48	42	87·23
	II.—*Local Diseases.*							
	Diseases of the—							
1	Nervous System	137	36	1	37	17	5	7·84
2	Eye	154	—	—	—	3	7	6·60
3	Ear	103	—	—	—	3	5	2·99
4	Nose	7	—	—	—	—	—	·21
5	Circulatory System	112	4	1	5	17	36	5·46
6	Absorbent „	237	—	—	—	—	—	16·36
7	Ductless Glands	2	—	—	—	—	—	2·21
8	Respiratory System	534	17	4	21	10	5	22·14
9	Digestive „	2,447	43	4	47	47	23	77·72
10	Urinary System — Gonorrhœa	925	—	—	—	—	—	41·97
	Urinary System — Sequelæ of Gonorr.	183	—	—	—	2	1	8·69
	Urinary System — Other diseases	98	3	2	5	1	2	4·57
11	Generative System	99	—	—	—	2	1	3·95
12	Organs of Locomotion	35	1	—	1	2	7	2·41
13	Cellular Tissue	189	1	—	1	—	—	7·33
14	Cutaneous System	690	—	—	—	1	5	20·31
	III.—*Debility*	467	1	—	1	154	60	18·74
	IV.—*Poisons*	59	2	—	2	—	—	1·33
	V.—*Injuries.*							
1	General	8	8	—	8	—	—	·60
2	Local	944	12	—	12	6	3	26·84
3	In action	4	—	—	—	—	—	·48
	No appreciable disease	13	—	—	—	—	—	·72
	Cause unknown (refers to deaths only).	—	—	—	—	—	—	—
	General Total	19,485	210	21	231	478	203	593·66
	Average for 10 years, 1870–79	—	—	—	—	—	—	—

* The average number constantly sick of the 66th Regiment from 1st January to 11th February (the date of
† The average ratios for 10 years will be given in future years. The ratios for the two years 1879 to 1880

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into HOSPITAL, DEATHS, NUMBERS INVALIDED and CONSTANTLY SICK* among the the Ratios per 1,000 of the Strength, and the Average Ratios for 10 Years.

Ratio per 1,000.					†Ratio per 1,000, for 1879.				
Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.	Admissions.	Deaths.	Invalids sent Home.	Invalids finally Discharged.	Constantly Sick.
1·0	·11	—	—	·05	·3	—	—	—	·02
148·9	4·02	—	—	3·99	112·1	1·82	·10	—	3·14
—	—	—	—	—	—	—	—	—	—
975·4	3·48	17·93	—	22·17	1112·5	1·62	8·48	·10	24·68
—	—	—	—	—	·2	·30	—	—	
9·3	·11	—	·11	·31	1·4	—	—	—	·04
1134·6	7·72	17·93	·11	26·52	1226·5	3·74	8·58	·10	27·88
39·4	·32	1·85	·54	1·99	36·7	·10	2·73	·81	1·80
92·4	·11	—	—	5·77	109·1	—	—	—	8·20
22·8	—	1·09	·87	1·31	23·3	—	1·92	·81	1·72
6·7	1·52	1·63	2·83	·44	9·3	1·21	4·24	2·22	1·03
3·8	·11	—	—	·20	·2	—	—	—	·01
8·8	·11	·65	·32	·48	4·8	·10	1·01	·20	·42
173·9	2·17	5·22	4·57	10·19	183·4	1·41	9·90	4·04	13·18
14·9	4·02	1·85	·54	·92	15·8	1·30	1·82	1·01	1·01
16·7	—	·32	·76	·77	14·3	—	·91	1·11	·69
11·2	—	·32	·54	·35	7·3	—	·40	·20	·39
·8	—	—	—	·03	2·0	—	—	—	·12
12·2	·54	1·85	3·92	·64	12·7	·91	3·84	2·93	·90
25·8	—	—	—	1·91	21·0	—	—	—	1·78
·2	—	—	—	·26	·2	—	—	—	·02
58·0	2·28	1·09	·54	2·59	60·7	2·53	·71	·71	2·88
266·0	5·11	5·11	2·50	9·08	214·6	4·23	10·30	3·23	8·52
100·5	—	—	—	4·90	116·1	—	—	—	7·28
19·9	—	·22	·11	1·02	10·3	—	—	·20	·81
10·6	·54	·11	·22	·53	7·9	·40	·40	·40	·39
10·8	—	·22	·11	·46	11·5	—	—	·10	·43
3·8	·11	·22	·76	·28	2·5	·10	·71	·40	·30
20·5	·11	—	—	·86	17·0	—	·10	·10	·93
75·0	—	·11	·54	2·37	65·1	—	·61	·30	2·67
50·8	·11	16·74	6·52	2·19	41·0	·10	21·51	5·15	1·91
6·4	·22	—	—	·16	9·3	·20	—	—	·20
·9	·87	—	—	·07	·1	·61	—	—	3·19
102·6	1·30	·65	·32	3·14	93·1	·81	·40	·71	
·4	—	—	—	·06	—	—	—	—	—
1·4	—	—	—	·08	1·6	—	—	—	·07
—	—	—	—	—	—	—	—	—	—
2117·9	25·10	51·96	22·06	69·38	2134·0	16·34	60·19	20·69	75·55
1507·0	16·37	43·77	14·43	55·59	—	—	—	—	—

crossing the Frontier) and of the 78th Highlanders are not included in this Table, as no information is obtainable will be given in the Report for 1881, those for the three years 1879 to 1881 in that for 1882, &c., &c.

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ABSTRACT No. XXXII.—The following TABLE, taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, shows the ADMISSIONS and DEATHS in the PRINCIPAL STATIONS in the BOMBAY COMMAND.

Military Divisions.	Stations.	Annual Average Strength.	Number of Admissions.	Number of Deaths.	Ratio per 1,000 of the Strength.			
					Admissions.	Deaths.	Average of 10 Years, 1870–79. Admissions.	Deaths.
Presidency Circle.	Bombay	701	1,365	26	1947·2	37·08	2009·5	17·21
	Deolali	67	103	1	1537·3	14·92	*2146·5	24·23
	Belgaum	719	855	5	1189·2	6·95	1038·0	7·97
	Aden	726	1,027	15	1414·6	20·66	1071·4	14·64
Sind Circle.	Kurrachee	1058	3,576	53	3380·0	50·09	1501·9	14·40
	Hyderabad	328	612	7	1865·8	21·34	1567·1	12·54
	Sukkur	2	6	1	3000·0	500·00	—	—
Poona Circle.	Poona	1,195	3,198	18	2676·1	15·06	1486·0	12·77
	Kirkee	458	915	5	1997·8	10·91	1520·8	11·51
	Ahmednugger	210	668	9	3180·9	42·85	1173·3	8·83
	Satara	149	237	1	1590·6	6·71	1378·7	11·89
	Khandalla	44	104	1	2363·6	22·72	—	—
	Poorundhur	8	2	—	250·0	—	†166·7	—
Mhow Circle.	Ahmedabad	167	440	3	2634·7	17·96	2195·3	26·40
	Deesa	325	591	4	1818·5	12·30	1333·8	17·73
	Baroda	198	767	4	3873·7	20·20	‡2140·6	30·38
	Mount Aboo	45	76	2	1688·9	44·44	1908·2	19·91
	Teethul	6	3	1	500·0	166·66	—	—
	Mhow	1,038	2,588	15	2493·3	14·45	1716·7	11·19
	Nusseerabad	626	976	12	1559·1	19·16	1919·9	24·68
	Neemuch	390	1,258	5	3225·6	12·82	2226·6	28·92
	Asseergurh	118	290	—	2457·6	—	1592·9	11·10
	Indore	88	259	1	2943·2	11·36	1615·5	16·95
	Faragurh	33	104	2	3151·5	60·60	—	—
	Non-effective at Depôts, and Sanitarium	218	405	7	1857·8	32·11	2215·1	42·69
	On March	270	224	5	829·6	18·51	886·2	12·38
	Total	9,187	20649	203	2247·6	22·09	—	—

* For six years only. † For two years only. ‡ For five years only.

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ABSTRACT No. XXXIII.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE and MORTALITY of the Different Classes of DISEASES in each of the MILITARY DIVISIONS in the BOMBAY COMMAND, with the Ratios per 1,000 of the Strength.

Orders.	Military Divisions	Presidency.		Sind.		Poona.		Mhow.		Troops on March.		Convalescents and Invalids.		Presidency.		Sind.		Poona.		Mhow.		Troops on March.		Convalescents and Invalids.	
	Average Strength	2,213		1,388		2,064		3,034		270		218		Ratio per 1,000 of mean Strength.											
	Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	I. *General Diseases.*																								
	Febrile Group.																								
	Eruptive Fevers	2	—	—	—	3	—	5	1	—	—	—	—	·9	—	—	—	1·4	—	1·7	·33	—	—	—	—
	Continued „	322	2	336	10	441	9	405	16	1	—	5	—	145·5	·90	242·1	7·20	213·7	4·36	133·4	5·27	3·7	—	22·9	—
	Yellow Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Paroxysmal Fevers	1,045	5	2,221	14	2,041	6	3,843	5	67	—	188	1	472·2	2·26	1600·1	10·09	988·9	2·91	1266·6	1·65	248·2	—	862·4	4·59
	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other diseases	2	—	3	—	81	—	5	—	1	1	4	—	·9	—	2·2	—	39·2	—	1·7	—	3·7	3·70	18·3	—
	Total of febrile group	1,371	7	2,560	24	2,566	15	4,258	22	69	1	197	1	619·5	3·16	1844·4	17·29	1243·2	7·27	1403·4	7·25	253·6	3·70	903·6	4·59
	Constitutional Group.																								
	Rheumatism	102	—	59	—	94	—	112	1	9	—	11	—	46·1	—	42·5	—	45·5	—	37·0	·33	33·3	—	50·5	—
	Primary Syphilis	202	—	152	—	246	—	266	1	24	—	14	—	91·3	—	109·5	—	119·2	—	87·6	·33	88·9	—	64·2	—
	Secondary „	43	—	38	—	68	—	75	—	2	—	11	—	19·4	—	27·4	—	33·0	—	24·7	—	7·4	—	50·5	—
	Tubercular diseases	15	2	11	2	18	1	15	2	2	—	9	1	6·8	·90	7·9	1·44	8·7	·48	4·9	·66	7·4	—	41·3	4·59
	Scurvy and Purpura	1	—	21	—	1	—	1	1	—	—	—	—	·4	—	15·1	—	·5	—	·3	·33	—	—	—	—
	Other diseases	12	—	59	—	5	1	3	—	—	—	3	—	5·4	—	42·5	—	2·4	·48	1·0	—	—	—	13·7	—
	Total of constitutional group.	375	2	340	2	432	2	472	5	37	—	48	1	169·4	·90	244·9	1·44	209·3	·97	155·5	1·65	137·0	—	220·2	4·59

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Orders.	Military Divisions	Presidency.		Sind.		Poona.		Mhow.		Troops on March.		Convalescents and Invalids.		Presidency.		Sind.		Poona.		Mhow.		Troops on March.		Convalescents and Invalids.	
	Average Strength	2,213		1,388		2,064		3,034		270		218		Ratio per 1,000 of mean Strength.											
	Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	II. *Local Diseases.*																								
	Diseases of the—																								
1	Nervous System	35	7	28	8	21	2	44	7	3	1	12	2	15·8	3·16	20·1	5·76	10·2	·97	14·5	2·31	11·1	3·70	55·1	9·17
2	Eye	28	—	28	—	55	—	48	—	1	—	2	—	12·7	—	20·1	—	26·7	—	15·8	—	3·7	—	9·2	—
3	Ear	11	—	17	—	28	—	47	—	—	—	1	—	5·0	—	12·3	—	13·6	—	15·5	—	—	—	4·6	—
4	Nose	1	—	—	—	2	—	5	—	—	—	—	—	·4	—	—	—	1·0	—	1·7	—	—	—	—	—
5	Circulatory System	22	—	17	2	30	1	43	1	—	—	4	1	9·9	—	12·3	1·44	14·5	·48	14·2	·33	—	—	18·3	4·59
6	Absorbent „	92	—	30	—	63	—	54	—	1	—	4	—	41·6	—	21·6	—	30·5	—	17·8	—	3·7	—	18·3	—
7	Ductless Glands	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	·7	—	—	—	—	—
8	Respiratory System	103	4	117	8	101	—	203	5	10	1	14	—	46·6	1·81	84·3	5·76	48·9	—	66·9	1·65	37·1	3·70	64·2	—
9	Digestive „	448	17	531	13	703	10	778	3	37	1	50	2	202·4	7·68	382·6	9·37	340·6	4·85	256·4	·99	137·0	3·70	229·4	9·17
10	Urinary System	247	—	81	—	252	—	380	—	27	—	13	—	111·6	—	58·4	—	122·1	—	125·3	—	100·0	—	59·7	—
		25	—	10	—	65	—	96	—	—	—	6	—	11·3	—	7·2	—	31·5	—	31·6	—	—	—	27·5	—
		21	2	26	1	54	—	25	—	—	—	4	—	9·5	·90	18·7	·72	26·2	—	8·2	—	—	—	18·3	—
11	Generative System	24	—	22	—	26	—	33	—	5	—	4	—	10·9	—	15·9	—	12·6	—	10·9	—	18·5	—	18·3	—
12	Organs of Locomotion	11	—	7	1	4	—	10	—	—	—	1	—	5·0	—	5·0	·72	1·9	—	3·3	—	—	—	4·6	—
13	Cellular Tissue	51	—	39	—	46	—	52	1	2	—	5	—	23·0	—	28·1	—	22·3	—	17·1	·33	7·4	—	22·9	—
14	Cutaneous System	161	—	106	—	234	—	204	—	9	—	12	—	72·8	—	76·4	—	113·4	—	67·2	—	33·3	—	55·1	—
	III. *Debility*	72	—	73	—	120	1	208	—	3	—	19	—	32·5	—	52·6	—	58·1	·48	68·6	—	11·1	—	87·2	—
	IV. *Poisons*	30	—	8	—	14	1	14	1	2	—	—	—	13·6	—	5·8	—	6·8	·48	4·6	·33	7·4	—	—	—
	V. *Injuries.*																								
1	General	1	5	—	—	2	1	1	1	—	1	—	—	·4	2·26	—	—	1·0	·48	·3	·33	—	3·70	—	—
2	Local	208	3	141	2	295	1	330	3	18	—	8	—	94·0	1·36	101·6	1·44	142·9	·48	108·8	·99	66·7	—	36·7	—
3	In action	—	—	6	—	—	—	—	—	—	—	—	—	—	—	4·3	—	—	—	—	—	—	—	—	—
	No appreciable disease	6	—	1	—	4	—	2	—	—	—	—	—	2·7	—	·7	—	1·9	—	·7	—	—	—	—	—
	Cause unknown	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Total	3,343	47	4,188	61	5,117	34	7,309	49	224	5	404	7	1510·6	21·23	3017·3	43·94	2479·2	16·47	2409·0	16·16	829·6	18·51	1853·2	32·11

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ABSTRACT No. XXXIV.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the BOMBAY COMMAND at which the ADMISSIONS and DEATHS from ENTERIC FEVER took place in each of the four quarters of the Year 1880.

Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Presidency Circle	Bombay	1	—	—	—	—	—	—	—	1	—
	Aden	1	—	—	—	—	—	—	—	1	—
Sind Circle	Kurrachee	—	—	—	—	3	3	6	6	9	9
	Sukkur	—	—	—	—	—	—	2	—	2	—
Poona Circle	Poona	—	—	—	—	1	1	4	4	5	5
	Ahmednuggur	1	1	—	—	—	—	—	—	1	1
	Kirkee	—	—	3	2	1	1	—	—	4	3
	Sattara	—	—	—	—	—	—	2	—	2	—
Mhow Circle	Deesa	1	—	—	—	—	—	—	—	1	—
	Mhow	—	—	12	5	—	—	6	4	18	9
	Nusseerabad	—	—	—	—	2	2	4	4	6	6
	Neemuch	—	—	—	—	—	—	2	—	2	—
	Indore	1	—	—	—	—	—	—	—	1	—
	Total	5	1	15	7	7	7	26	18	53	33

ABSTRACT No. XXXV.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the STATIONS in the BOMBAY COMMAND at which the ADMISSIONS and DEATHS from CHOLERA took place in each of the four quarters of the Year 1880.*

Divisions.	Stations.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Total.	
		Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	Total										

* No cases of cholera occurred in the Bombay Command during the year.

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ABSTRACT No. XXXVI.—Table taken from the REPORT of the PRINCIPAL MEDICAL OFFICER, showing the PREVALENCE of DYSENTERY, DIARRHŒA, and HEPATITIS in each of the DIVISIONS in the BOMBAY COMMAND for 1880.

Divisions.	Presidency Circle.		Sind Circle.		Poona Circle.		Mhow Circle.		On March.		Total.	
Strength.	2,288		1,415		2,154		3,060		270		9,187	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Dysentery - - - -	89	9	140	12	127	4	42	—	14	—	412	25
Diarrhœa - - - -	100	1	221	—	170	1	222	—	14	—	727	2
Hepatitis and Abscess of Liver -	53	3	30	—	86	4	74	1	1	—	244	8
Total - - -	242	13	391	12	383	9	338	1	29	—	1,383	35
Ratio per 1,000 of Strength.												
Dysentery - - - -	38·9	3·93	98·9	8·48	59·0	1·86	13·7	—	51·8	—	44·8	2·72
Diarrhœa - - - -	43·7	·44	156·2	—	78·9	·46	72·5	—	51·8	—	79·1	·22
Hepatitis and Abscess of Liver -	23·2	1·31	21·2	—	39·9	1·86	24·2	·33	3·7	—	26·6	·87
Total - - -	105·86	5·68	276·32	8·48	177·80	4·18	110·4	·33	107·40	—	150·5	3·81

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ABSTRCT No. XXXVII.—TABLE taken from the REPORT of the PRINCIPAL MEDICAL OFFICER showing the PREVALENCE and MORTALITY in the BOMBAY COMMAND, due to DYSENTERY, DIARRHŒA, and HEPATITIS, in each Quarter of the Year 1880.

—	Dysentery.				Diarrhœa.				Hepatitis (including Abscess of Liver).				Total.			
	Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.		Number.		Ratio per 1,000 of the Strength.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1st Quarter - -	87	—	9·2	—	110	—	11·6	—	31	—	3·3	—	228	—	24·0	—
2nd „ - - -	38	2	4·1	·21	98	—	10·5	—	73	4	7·8	·43	209	6	22·5	·64
3rd „ - - -	62	1	7·5	·12	176	—	21·3	—	58	1	7·0	·12	296	2	35·9	·24
4th „ - - -	225	22	23·1	2·25	343	2	35·2	·20	82	3	8·4	·30	650	27	66·7	2·75
Total for the Year -	412	25	44·8	2·72	727	2	79·1	·21	244	8	26·5	·87	1,383	35	150·5	3·80

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ABSTRACT No. XXXVIII.—The following TABLE shows the ADMISSIONS, MORTALITY and INVALIDING in each CORPS, serving in the BOMBAY COMMAND.

Corps.	Average Strength.	Admissions into Hospital.			Deaths in and out of Hospital.			Invalids.	Ratio per 1,000.		
		From General Diseases.	From other Diseases.	Total.	From General Diseases.	From other Diseases.	Total.		Admissions.	Deaths.	Invalids.
CAVALRY.											
17th Lancers - - -	443	306	390	696	6	—	6	20	1571·10	13·54	45·14
ARTILLERY.											
D Battery, B Brigade, R.H.A.	101	107	67	174	1	6	7	6	1722·77	69·31	59·40
E „ B „ „	62	20	40	60	—	—	—	—	967·74	—	—
I „ 1 „ R.A. -	153	119	120	239	—	2	2	—	1562·09	13·07	—
M „ 1 „ „ -	117	109	93	202	—	1	1	5	1726·49	8·54	42·73
N „ 1 „ „ -	150	91	51	142	—	1	1	5	946·66	6·66	33·33
A „ 2 „ „ -	149	252	125	377	—	2	2	6	2530·20	13·42	40·26
B „ 2 „ „ -	147	73	77	150	1	—	1	6	1020·40	6·80	40·81
C „ 2 „ „ -	49	40	54	94	—	2	2	--	1918·36	40·81	—
D „ 2 „ „ -	154	132	127	259	1	2	3	—	1681·82	19·48	—
E „ 2 „ „ -	147	95	177	272	1	2	3	5	1850·34	20·40	34·01
F „ 2 „ „ -	96	59	92	151	—	6	6	—	1572·92	62·5	20·83
G „ 2 „ „ -	149	281	179	460	—	2	2	11	3087·24	13·42	73·82
5 „ 8 „ „ -	60	152	40	192	—	3	3	—	3200·00	50·00	—
9 „ 8 „ „ -	75	13	41	54	—	3	3	2	720·00	40·00	26·66
10 „ 8 „ „ -	8	8	12	20	—	2	2	—	2500·00	250·00	—
13 „ 8 „ „ -	69	67	58	125	—	—	—	9	1811·59	—	130·43
14 „ 8 „ „ -	76	35	69	104	1	—	1	2	1368·42	13·15	26·31
15 „ 8 „ „ -	12	1	1	2	—	1	1	—	166·66	83·33	—
16 „ 8 „ „ -	21	5	12	17	—	1	1	—	809·52	47·61	—
17 „ 8 „ „ -	87	87	64	151	—	1	1	5	1735·63	11·49	57·47
18 „ 8 „ „ -	14	4	8	12	—	—	—	—	857·14	—	—
1 „ 9 „ „ -	11	1	8	9	—	—	—	—	818·18	—	—
2 „ 9 „ „ -	57	40	53	93	—	—	—	7	1631·57	—	122·80
10 „ 9 „ „ -	75	55	61	116	2	2	4	3	1546·66	53·33	40·00
14 „ 9 „ „ -	17	14	10	24	—	—	—	—	1411·76	—	—
15 „ 9 „ „ -	78	150	50	200	—	2	2	4	2564·10	25·64	51·28
5 „ 11 „ „ -	15	6	9	15	—	—	—	—	1000·00	—	—
8 „ 11 „ „ -	60	32	36	68	—	—	—	3	1133·33	—	50·00
Staff, RA. (Mhow Division) -	3	—	1	1	—	—	—	—	333·33	—	—
„ (Poona „) -	4	—	—	—	—	—	—	—	—	—	—
„ (Aden Brigade) -	6	—	—	—	—	—	—	—	—	—	—
Total - -	2,222	2,048	1,735	3,783	7	41	48	79	1702·52	21·60	33·75
Royal Engineers (*Bombay Sappers and Miners*).	44	11	9	20	—	1	1	1	454·54	22·72	22·72

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Corps.	Average Strength.	Admissions into Hospital.			Deaths in and out of Hospital.			Invalids.	Ratio per 1,000.		
		From General Diseases.	From other Diseases.	Total.	From General Diseases.	From other Diseases.	Total.		Admissions.	Deaths.	Invalids.
INFANTRY.											
1st Batt., 6th Regiment -	448	367	276	643	1	10	11	9	1435·26	24·55	20·03
2nd „ 4th „ -	554	503	322	825	1	3	4	—	1489·16	7·20	—
2nd „ 7th „ -	96	33	65	98	2	—	2	—	1020·83	20·83	—
2nd „ 11th „ -	323	346	264	610	1	4	5	—	1888·54	15·48	—
2nd „ 15th „ -	583	1,108	387	1,495	6	14	20	2	2564·32	34·30	3·43
2nd „ 17th „ -	837	990	627	1,617	10	5	15	23	1931·89	17·92	27·41
29th Regiment - -	877	1,889	675	2,564	6	4	10	33	2923·60	11·40	37·62
61st „ - - -	126	477	99	576	—	2	2	—	4571·42	15·87	—
62nd „ - - -	99	80	67	147	—	1	1	—	1484·84	10·10	—
66th „ - - -	176	229	170	399	5	4	9	—	2267·04	51·14	—
78th „ - - -	557	1,060	450	1,510	6	7	13	—	2710·95	23·34	—
83rd „ - - -	738	382	431	813	2	4	6	9	1101·62	8·13	12·19
98th „ - - -	281	774	231	1,005	14	5	19	—	3576·51	67·61	—
1st Batt., Rifle Brigade -	243	375	357	732	2	1	3	—	3012·34	12·34	—
INDIAN DEPÔTS.											
Depôt 2nd Batt., 7th Regiment	149	223	279	501	2	6	8	2	3362·41	53·69	13·42
„ 2nd „ 11th „ -	79	151	135	286	1	4	5	2	3620·25	63·29	25·31
„ 2nd „ 15th „ -	133	215	192	407	2	5	7	87	3060·15	52·63	654·13
„ 61st Regiment - -	33	164	50	214	2	—	2	—	6484·84	60·60	—
„ 66th „ - -	81	98	59	157	1	2	3	46	1938·27	37·03	567·90
„ 78th „ - -	74	175	154	329	4	5	9	165	4445·94	121·62	2229·72
„ Hospital, Sukkur -	4	15	43	58	—	1	1	—	14500·00	250·00	—
Total - -	6,491	9,653	5,333	14,986	68	87	155	378	2308·73	23·88	58·23
Grand Total -	9,200	12,018	7,467	19,485	81	129	210	478	2117·94	22·83	51·96

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ABSTRACT No. XXXIX.—Table taken from the Report of the Principal Invaliding in the Three Grades of Commissioned Officers, Non-Ten previous Years:

Years.	Average Strength.			Number of Deaths.		
	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.
1870 - - -	517	1,211	9,346	5	26	147
1871 - - -	496	1,216	9,620	5	33	118
1872 - - -	443	1,199	9,699	10	32	173
1873 - - -	397	1,150	9,523	7	16	109
1874 - - -	385	1,139	9,439	1	16	97
1875 - - -	363	1,163	9,170	7	33	181
1876 - - -	368	1,173	9,111	5	18	110
1877 - - -	375	1,160	8,989	4	13	108
1878 - - -	364	1,316	8,588	3	34	166
1879 - - -	373	1,282	8,502	3	21	136
Average for 10 years -	408	1,201	9,199	5	20	134
1880 - - -	366	1,279	7,921	4	42	168

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MEDICAL OFFICER at BOMBAY, showing the COMPARATIVE MORTALITY and COMMISSIONED OFFICERS, and PRIVATES for the Year under Report, and for the

Invalided.			Ratio per 1,000.					
			Deaths.			Invalids.		
Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.	Commissioned Officers.	Non-commissioned Officers.	Privates.
46	42	319	9·66	21·47	15·73	88·97	34·66	34·18
37	27	219	10·88	27·05	12·27	74·59	22·20	22·77
34	30	282	22·55	26·69	17·84	76·75	25·02	29·03
38	47	379	17·63	13·91	11·44	95·72	40·87	39·80
27	65	376	12·59	14·05	10·28	70·13	51·07	39·83
33	55	573	11·02	28·37	19·74	90·91	47·29	62·49
43	49	433	13·59	13·59	15·27	116·85	41·56	47·52
35	63	427	10·67	10·67	11·21	93·33	54·31	47·50
44	86	492	8·24	25·84	19·33	120·88	65·35	57·29
20	75	521	8·04	16·38	15·99	53·62	58·50	61·28
36	54	402	12·25	16·64	14·56	88·23	44·96	43·70
21	51	427	10·92	32·83	21·20	57·37	39·87	53·90

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ABSTRACT No. XL.—TABLE showing the AVERAGE STRENGTH, ADMISSIONS and returning from FOREIGN SERVICE, and proceeding from one Colony

Orders.	Strength of N.C.O. and Men:	Passage Out.		Passage Home.		Intercolonial.	
	Embarked	17,239		10,406		7,046	
	Average Annual Strength	1,273		793		347	
	Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
	I.—*General Diseases.*						
	Febrile Group.						
	Eruptive Fevers	15	—	—	—	—	—
	Continued ,,	30	—	65	2	24	—
	Yellow Fever	—	—	—	—	—	—
	Paroxysmal Fevers	3	—	81	—	6	—
	Cholera	—	—	—	—	—	—
	Other diseases	7	—	—	—	—	—
	Total	55	—	146	2	30	—
	Constitutional Group.						
	Rheumatism	32	1	22	—	3	—
	Primary Syphilis	146	—	65	—	30	—
	Secondary ,,	27	—	6	—	4	—
	Tubercular diseases	5	1	2	—	1	—
	Scurvy and Purpura	—	—	—	—	1	—
	Other Diseases	4	—	2	—	—	—
	Total	214	2	97	—	39	—
	II.—*Local Diseases.*						
	Diseases of the—						
1	Nervous System	30	1	5	1	7	1
2	Eye	23	—	7	—	8	—
3	Ear	1	—	1	—	—	—
4	Nose	1	—	—	—	—	—
5	Circulatory System	1	—	1	1	2	—
6	Absorbent ,,	9	—	6	—	4	—
7	Ductless Glands	—	—	—	—	—	—
8	Respiratory System	60	1	38	1	12	—
9	Digestive ,,	141	—	86	5	25	—
10	Urinary System — Gonorrhœa	270	—	89	—	55	—
	Urinary System — Sequelæ of Gonorrhœa	17	—	10	—	6	—
	Urinary System — Other diseases	9	—	—	—	—	—
11	Generative System	8	—	5	—	3	—
12	Organs of Locomotion	5	—	—	—	2	—
13	Cellular Tissue	21	—	10	—	11	—
14	Cutaneous System	142	—	30	—	34	—
	III.—*Debility*	13	—	19	—	1	—
	IV.—*Poisons*	1	—	3	1	2	—
	V.—*Injuries.*						
1	General	1	—	—	1	—	—
2	Local	92	—	16	—	37	—
3	In action	—	—	—	—	—	—
	No appreciable disease	1	—	—	—	—	—
	Cause unknown (refers to deaths only).	—	—	—	—	—	—
	General Total	1,115	4	569	12	278	1
	rage of 10 years 1870–79	—	—	—	—	—	—

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into HOSPITAL, and DEATHS among the TROOPS on BOARD SHIP, proceeding on or Station abroad to another, with the ratio per 1,000 of the Strength.

Ratio per 1,000 of the Strength.					
Passage out.		Passage Home.		Intercolonial.	
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
11·8	—	—	—	—	—
23·6	—	82·0	2·52	69·2	—
—	—	—	—	—	—
2·3	—	102·1	—	17·3	—
—	—	—	—	—	—
5·5	—	—	—	—	—
43·2	—	184·1	2·52	86·5	—
25·1	·78	27·7	—	8·6	—
114·7	—	82·0	—	86·5	—
21·2	—	7·6	—	11·5	—
3·9	·78	2·5	—	2·9	—
—	—	—	—	2·9	—
3·2	—	2·5	—	—	—
168·1	1·57	122·3	—	112·4	—
23·6	·78	6·3	1·26	20·2	2·88
18·1	—	8·8	—	23·0	—
·8	—	1·3	—	—	—
·8	—	—	—	—	—
·8	—	1·3	1·26	5·8	
7·1	—	7·6	—	11·5	—
—	—	—	—	—	—
47·1	·78	47·9	1·26	34·6	—
110·7	—	108·4	6·31	72·0	—
212·1	—	112·2	—	158·5	—
13·3	—	12·6	—	17·3	—
7·1	—	—	—	—	—
6·3	—	6·3	—	8·6	—
3·9	—	—	—	5·8	—
16·5	—	12·6	—	31·7	—
111·5	—	37·8	—	98·0	—
10·2	—	24·0	—	2·9	—
·8	—	3·8	1·26	5·8	—
·8	—	—	1·26	—	—
72·3	—	20·2	—	106·6	—
—	—	—	—	—	—
·8	—	—	—	—	—
—	—	—	—	—	—
875·9	3·14	717·5	15·13	801·2	2·88
522·5	4·57	509·9	14·25	712·7	9·59

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ABSTRACT No. XLI.—On the Influence of Age on the Mortality.—Table showing the Death Rates of the Non-commissioned Officers and Men at the several Ages, arranged by quinquennial Periods in the several Foreign Commands.

Commands.	Under 20 Years.				20 and under 25.				25 and under 30.				30 and under 35.				35 and under 40.				40 and upwards.			
	Strength.	Died.	Ratio per 1,000.		Strength.	Died.	Ratio per 1,000.		Strength.	Died.	Ratio per 1,000.		Strength.	Died.	Ratio per 1,000.		Strength.	Died.	Ratio per 1,000.		Strength.	Died.	Ratio per 1,000.	
			1880.	1870-79.			1880.	1870-79.			1880.	1870-79.			1880.	1870-79.			1880.	1870-79.			1880.	1870-79.
Gibraltar	359	—	—	1·57	1,705	5	2·93	4·04	1,189	2	1·68	5·59	468	1	2·14	7·29	271	4	14·76	7·51	157	5	31·85	1·71
Malta	240	2	8·33	3·72	2,143	27	12·60	7·76	1,455	9	6·19	7·65	516	2	3·88	10·41	238	4	16·81	11·96	73	2	27·40	12·18
Cyprus	13	—	—	—	160	—	—	23·67	207	1	4·83	20·06	75	—	—	10·87	21	—	—	—	6	—	—	—
Canada	86	—	—	1·82	682	2	2·93	5·25	616	3	4·87	3·78	208	3	14·42	10·72	108	1	9·26	11·10	65	2	30·77	17·06
Bermuda	168	—	—	·66	876	10	11·42	4·84	476	3	6·30	8·06	296	2	6·76	15·14	154	1	6·49	16·62	53	—	—	25·10
West Indies	63	—	—	5·96	405	4	9·88	12·14	455	2	4·40	9·11	116	3	25·86	20·05	64	—	—	9·52	25	—	—	50·42
Cape of Good Hope and St. Helena.	*	*	*	2·41	*	*	*	4·73	*	*	*	7·72	*	*	*	13·61	*	*	*	23·84	*	*	*	8·13
Mauritius	11	—	—	11·90	192	—	—	22·11	98	—	—	33·03	43	—	—	16·89	23	—	—	16·88	6	1	166·66	48·39
Ceylon	57	—	—	1·87	374	13	34·76	12·98	292	4	13·70	14·46	64	2	31·25	13·93	56	1	17·86	32·36	31	2	64·52	7·44
China and Straits Settlements.	90	—	—	2·46	829	5	6·03	6·15	500	9	18·00	10·31	188	—	—	13·60	102	—	—	23·77	19	—	—	28·57
India	1,227	13	10·59	6·65	17,785	412	23·17	14·79	16,822	365	21·70	16·95	7,493	199	26·56	22·14	3,361	86	25·59	28·17	1,011	46	45·50	52·01

* The Principal Medical Officer at the Cape not having been able to furnish the necessary statistics, this information cannot be given.

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ABSTRACT No. XLII.—The various Corps which served in the different Foreign Commands during the year 1880, and some of the most important of their Health Statistics, are shown in the following Table :—

Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Average Number Constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.			Admitted.	Died.	Invalided.	Constantly Sick.		
													days.	days.
GIBRALTAR.														
Royal Artillery	—	846	527	2	1	3	37	34·37	622·9	3·55	43·74	40·63	14·86	23·87
Royal Engineers	—	333	183	1	—	1	7	9·76	549·5	3·00	21·02	29·34	10·73	19·52
2nd Battalion, 23rd Foot	5	65	39	—	—	—	3	2·24	600·0	—	46·15	34·46	12·61	21·02
2nd „ 24th „	3	446	311	2	—	2	9	16·41	697·3	4·48	20·18	36·79	13·47	19·31
41st Foot	—	267	364	2	—	2	3	17·08	1363·3	7·49	11·24	63·97	23·42	17·17
46th „	4	516	485	2	—	2	16	31·78	939·9	3·88	31·00	61·59	22·54	23·98
71st „	—	92	62	—	—	—	2	3·07	674·0	—	21·74	33·37	12·22	18·12
79th „	1	581	441	2	—	2	24	29·00	759·0	3·44	41·31	49·91	18·27	24·07
93rd „	2	638	515	1	—	1	32	30·06	807·2	1·57	50·16	46·96	17·24	21·36
97th „	7	21	23	—	—	—	—	·86	1095·2	—	—	40·95	14·99	13·69
2nd Battalion, Rifle Brigade	6	559	278	3	1	4	15	17·94	497·3	7·15	26·83	32·09	11·75	23·62
Army Service Corps	—	67	52	1	—	1	3	2·72	776·1	14·93	44·78	40·52	14·86	19·14
Army Hospital Corps	—	43	24	—	—	—	5	1·34	558·1	—	116·28	31·16	11·40	20·44
Garrison Staff and Departments	—	9	5	1	—	1	—	·16	555·5	111·11	—	17·77	6·51	11·71
MALTA.														
Royal Artillery	7	894	649	5	—	5	12	41·96	725·9	5·59	13·42	46·93	17·17	23·66

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Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Average Number Constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.			Admitted.	Died.	Invalided.	Constantly Sick.		
													days.	days.
MALTA—*cont.*														
Royal Engineers	—	225	218	4	1	5	5	11·01	968·9	22·22	22·22	48·03	17·91	18·48
1st Battalion, 1st Foot	2 1/12	691	520	3	1	4	13	35·92	752·5	5·79	18·81	51·98	19·03	25·28
2nd „ 10th „	2 1/12	652	449	7	1	8	10	25·51	688·6	12·27	15·33	39·12	14·32	20·79
1st „ 20th „	8	403	382	3	—	3	6	17·57	947·9	7·44	14·89	43·59	15·95	16·83
26th Foot	1/12	264	363	4	—	4	—	12·61	1375·0	15·15	—	47·76	17·48	12·71
35th „	5	526	488	11	—	11	16	24·27	927·7	20·91	30·41	46·14	16·88	18·20
38th „	1/12	328	381	1	—	1	—	17·10	1161·6	3·05	—	52·13	19 08	16·42
42nd „	—	1	2	—	—	—	—	·06	2000·0	—	—	60·00	21·96	10·98
61st „	2 1/12	407	322	3	—	3	8	19·51	791·1	7·37	19·65	47·93	17·54	22·18
98th „	8	418	372	3	—	3	16	19·60	889·9	7·17	38·27	46·88	17·16	19·23
Army Service Corps	—	15	2	1	—	1	—	·01	133·3	66·66	—	·66	·24	1·83
Army Hospital Corps	—	56	39	1	—	1	2	2·32	696·4	17·85	35·71	41·42	15·16	21·77
Garrison Staff and Departments	—	5	—	—	—	—	—	—	—	—	—	—	—	—
CYPRUS.														
31st Company, Royal Engineers	2 1/12	73	91	1	—	1	1	3·81	1246·6	13·70	13·70	52·19	19·10	15·32
1st Battalion, 20th Foot	7 1/12	253	256	—	—	—	7	16·13	1011·9	—	27·67	63·75	23·33	23·06
35th Foot	5	76	74	—	—	—	—	2·77	973·7	—	—	36·45	13·34	13·70

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Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Average Number Constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.			Admitted.	Died.	Invalided.	Constantly Sick.		
CYPRUS—*cont.*													days.	days.
Garrison Staff and Departments	—	41	23	—	—	—	—	·89	561·0	—	—	21·70	7·94	14·16
CANADA.														
Royal Artillery	—	283	225	3	—	3	7	11·72	795·0	10·60	24·73	41·41	15·12	19·06
Royal Engineers	—	121	112	1	—	1	5	4·14	925·6	8·26	41·32	34·21	12·52	13·52
1st Battalion, 19th Foot	3	53	87	—	—	—	—	2·06	1641·5	—	—	38·86	14·22	8·66
97th Foot	7	575	449	4	—	4	19	25·38	780·9	6·95	33·04	44·13	16·15	20·68
101st „	6	604	546	3	—	3	26	33·05	904·0	4·96	43·05	54·71	20·02	22·15
Army Service Corps	—	16	9	—	—	—	1	1·08	562·5	—	62·50	67·50	24·70	43·92
Army Hospital Corps	—	13	5	—	—	—	2	·42	384·6	—	153·84	32·30	11·82	30·74
Garrison Staff and Departments	—	5	1	—	—	—	—	·11	200·0	—	—	22·00	8·05	40·26
BERMUDA.														
Royal Artillery	—	194	107	2	1	3	10	8·41	551·5	15·46	51·55	43·35	15·87	28·77
Royal Engineers	—	417	289	1	2	3	11	13·15	693·0	7·19	26·38	31·53	11·54	16·65
1st Battalion, 19th Foot	3	521	335	4	—	4	17	20·35	643·0	7·68	32·63	39·06	14·30	23·23
46th Foot	4	92	44	2	—	2	6	5·38	478·3	21·74	65·22	58·48	21·40	44·75
86th „	—	79	71	—	—	—	—	2·19	898·7	—	—	27·72	10·15	11·29
99th „	2	589	488	5	—	5	13	27·62	828·5	8·49	22·07	46·89	17·16	20·72

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Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Average Number Constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.			Admitted.	Died.	Invalided.	Constantly Sick.		
BERMUDA—*cont.*													days.	days.
Army Service Corps	—	55	26	1	—	1	2	1·09	472·7	18·18	36·36	19·82	7·25	15·34
Army Hospital Corps	—	26	13	1	—	1	—	1·06	500·0	40·00	—	38·46	14·78	29·56
Garrison Staff and Departments	—	1	1	—	—	—	—	·01	1000·0	—	—	10·00	3·66	3·66
WEST INDIES.														
Royal Artillery	—	190	189	2	—	2	11	9·85	994·7	10·53	57·89	51·84	18·97	19·07
Royal Engineers	—	8	4	—	—	—	—	·06	500·0	—	—	7·50	2·74	5·49
1st Battalion, 4th Foot	6	789	727	6	—	6	32	33·14	921·4	7·60	40·56	42·00	15·37	16·68
Other Infantry Detachments	—	17	20	—	—	—	1	·81	1176·5	—	58·82	47·65	17·44	14·82
Army Hospital Corps	—	14	5	—	—	—	—	·03	357·1	—	—	2·14	·78	2·20
Garrison Staff and Departments	—	19	7	1	—	1	—	·58	368·4	52·63	—	30·53	11·17	30·33
CAPE OF GOOD HOPE AND ST. HELENA.														
1st Dragoon Guards	2	428	313	9	—	9	31	27·37	731·3	21·03	72·43	63·95	23·40	32·00
17th Lancers	2	10	1	—	—	—	1	·34	100·0	—	100·00	34·00	12·44	124·44
Royal Artillery	—	355	278	3	—	3	19	17·31	783·1	8·45	53·52	48·76	17·85	22·79
Royal Engineers	—	186	131	2	—	2	10	8·52	704·3	10·75	53·76	45·81	16·76	23·80

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Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Average Number Constantly Sick.	Ratio per 1,000 of Strength.				Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.			Admitted.	Died.	Invalided.	Constantly Sick.		
CAPE OF GOOD HOPE AND ST. HELENA—*cont.*													days.	days.
2nd Battalion, 4th Foot	2	135	130	4	1	5	10	·80	963·0	37·04	74·07	59·26	2·17	2·25
2nd „ 21st „	2	742	736	25	2	27	47	56·63	991·1	36·39	63·34	76·32	27·93	28·16
2nd „ 24th „	3	47	18	1	1	2	6	1·77	383·0	21·28	42·55	37·66	13·78	35·99
58th Foot	2	746	323	12	—	12	34	25·64	433·0	16·08	45·58	34·37	12·58	29·05
3rd Battalion, 60th Rifles	2	752	593	3	1	4	36	33·38	788·6	5·32	47·88	43·06	15·76	19·96
91st Foot	2	560	652	1	1	2	15	50·26	1164·4	3·57	26·78	89·75	32·85	28·21
94th „	2	714	639	81	—	81	16	32·65	894·9	113·44	22·41	45·72	16·74	18·70
Other Infantry Regiments	—	—	—	—	3	3	—	—	—	—	—	—	—	—
Other Corps	—	310	254	5	—	5	14	19·19	819·4	16·13	45·16	61·90	22·66	27·62
Garrison Staff and Departments	—	567	357	24	—	24	23	25·50	629·6	42·33	40·56	44·97	16·43	26·08
MAURITIUS.														
Royal Artillery	—	96	215	1	1	2	5	9·73	2239·6	20·83	52·08	101·35	37·09	16·56
Detachment of 91st Foot	2	235	548	—	—	—	19	24·69	2331·5	—	80·85	105·06	38·45	16·49
Other Detachments of Infantry	—	3	7	—	—	—	3	·21	2333·3	—	1000·00	70·00	25·62	10·96
Garrison Staff and Departments	—	19	8	—	—	—	1	·15	421·5	—	52·66	7·89	2·89	6·86

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Corps and Commands.	Completed Years of Service in Foreign Commands.	Average Annual Strength.	Admitted into Hospital.	Died.			Invalids sent Home.	Ratio per 1,000 of Strength.					Average Sick Time to each Soldier.	Average Duration of each Case of Sickness.
				In the Command.	Of Invalids.	Total.		Average Number Constantly Sick.	Admitted.	Died.	Invalided.	Constantly Sick.		
CEYLON.														
Royal Artillery	—	202	265	4	1	5	12	9·29	1311·9	24·75	59·40	45·99	16·83	12·83
102nd Foot	4	778	958	17	2	19	44	54·12	1231·4	24·42	56·55	69·56	25·46	20·67
Garrison Staff and Departments	—	20	15	1	—	1	2	·83	750·0	50·00	100·00	41·50	15·19	20·25
CHINA AND THE STRAITS SETTLEMENTS.														
Royal Artillery	—	190	181	2	—	2	5	8·58	952·6	10·52	26·32	45·16	16·53	17·35
Royal Engineers	—	21	12	—	—	—	—	·28	571·4	—	—	13·33	4·88	8·54
2nd Battalion, 3rd Foot	4	711	678	1	—	1	13	29·56	953·6	1·41	18·28	41·56	15·21	15·96
27th Foot	4	835	866	11	—	11	16	43·19	1037·1	13·17	19·16	51·72	18·93	18·25
74th „	—	—	—	—	1	1	—	—	—	—	—	—	—	—
Army Hospital Corps	—	14	6	—	—	—	1	·23	428·6	—	71·43	16·43	6·01	14·03
Garrison Staff and Departments	—	10	—	—	—	—	—	—	—	—	—	—	—	—

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HOME STATIONS.

United Kingdom.

SANITARY REPORT.

Aldershot.

Surgeon-General H. Stanhope Fasson, M.D., reports that "out of an average strength of 11,068 stationed at Aldershot in 1880, the total daily inefficiency from sickness has been 553, or 5 per cent. of the men, which is a high average for this station, while 57 have died, or about 4½ out of every 1,000, a comparatively low proportion. Each sick man, on an average, has remained 22 days under treatment.

"About one fifth of the inefficiency has been caused by venereal disease, 18 out of every 100 men having gone into hospital for venereal ailments during the year. This is a high average, and cannot be satisfactorily accounted for. The difficulties attending the working of the Contagious Diseases Act at Aldershot are very great, partly from the constant changes of men, and partly from the migratory character of many of the women, who, when beginning to get known to the police, move to other places; there is, however, a distinct absence of the virulent form of syphilis formerly seen.

"Sanitary defects cannot be charged with any direct bearing on the diseases that have occurred. The South Camp sewage is carried out on the wet principle, and empties itself beyond the North Camp on a farm of over 100 acres of unproductive moorland which is enriched and made profitable by this means.

"Some complain of smell from this in a certain direction of the wind, but the weight of evidence is in favour of the view that this system of sewage disposal has in no way exerted an influence prejudicial to the health of the troops.

"The North Camp sewage is removed dry in straw nests and piled with carbolic sprinklings on the 'Goux' plan. This 'Goux' Depôt is generally free from smell, and has no deleterious effect on the public health, being at a safe distance from inhabited buildings.

"The condition of the several latrines, urinals, ashpits, and camp ground generally has been carefully looked to, and has been on the whole satisfactory. The water supply has been once or twice somewhat deficient in quantity, but the quality of the drinking water from moor sources is most excellent.

"The cubic space has been sufficient and seldom under 'regulation' amount.

"The rations and cooking have been excellent.

"The hospital accommodation has been very good and generally sufficient.

"A good deal has been done in the way of improving latrine and urinal accommodation during the year—Jennings' patent watercloset pans have been introduced generally at the Permanent Barracks. In the South Camp the discharge apparatus of the latrines has been renewed, and in the North Camp the Goux system of latrines has been reconstructed and improved and drainage generally carried out. Ablution rooms and watercloset have been newly provided to a proportion of the huts at the North Camp Hospital. Latrines for standing camps on the outlying War Department lands have been arranged. Increased accommodation in the Military Prison at North Camp has been provided, the promise of further improvement is recorded for the ensuing year. A considerable extension and improvement of married quarters in the Permanent Barracks is the most prominent measure contemplated.

"The Station Hospital system has been in full operation, and, without any loss of efficiency, has minimised administration and personnel very materially."

Eastern District.

Deputy Surgeon-General R. Gilborne reports that "the health of the troops serving in the Eastern District during the past year has been good.

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United Kingdom.

"Measles and diphtheria were prevalent at Bedford during the year, 15 cases of the former and 2 (fatal) of the latter appeared among the soldiers' families. The Medical Officer at Bury St. Edmunds reported some overcrowding at that station in December, which on representation to the proper authorities was speedily remedied by the departure of a draft of 70 men to join the regiment in Jersey.

"The following sanitary improvements have been effected during the year:—

"*Harwich.*—New married quarters constructed.

"*Landguard Fort.*—Water supply improved.

"*Great Yarmouth.*—A new hospital built.

"*Norwich.*—Married soldiers' quarters and washhouse erected.

"*Ipswich.*—Closets converted to dry-earth system. At this station it is proposed to enlarge the hospital for 12 additional patients, also to remedy the present means of drainage by connecting the barrack drains with those of the town system.

"The effect of gymnastic training on the health of the troops at the stations where schools exist, viz, Colchester and Warley, has been good."

South-eastern District.

Deputy Surgeon-General J. Hendley, C.B., reports:—"The admissions for syphilis exceed those of last year by three tenths; a considerable number of venereal diseases appear to have originated out of the district. Brighton, as usual, shows the largest number of admissions, and the cases occurring at this station are always of a severe type and generally followed by secondary symptoms. Maidstone is very free from venereal affections as a rule; there was only one admission for syphilis in 1879, but nine are shown in the return for 1880; in the majority of these, however, the disease was contracted elsewhere. Brighton is the only military station in this district unprotected by the Contagious Diseases Act.

"The sanitary state of the barracks and hospitals and accommodation for the troops has been generally satisfactory.

"*Dover.*—At this station certain changes in the working of some sanitary measures, introduced early in the year, have had a good result. I have succeeded in getting a satisfactory arrangement authorised for the treatment of cases of infectious diseases occurring in soldiers' families. All such cases will be conveyed to the town hospital for infectious diseases, where they will be treated by the medical practitioner in charge at a fixed rate per woman and child for their maintenance.

"*Shorncliffe.*—Some new huts are being erected, and it is expected that in course of time the decaying old ones will be replaced. There is some improvement in latrine arrangements, but the sewerage of the camp is still an unsettled question. I hope, however, to see the dry-earth system generally adopted at Shorncliffe in the latrines, and the fluid refuse from the urinals and lavatories carried into the sea by an improved plan of drainage. There is a correspondence proceeding at this station on the subject of hospital accommodation for soldiers' families suffering from infectious diseases.

"*Canterbury.*—Here everything is satisfactory, excepting that there is hardly sufficient accommodation for married soldiers; no ill effects have, however, been traced to overcrowding. A row of cottages occupied as quarters by the standing staff of militia non-commissioned officers have been vacated in consequence of an unsanitary state of sewerage and drainage, but they will soon be ready for re-occupation.

"*Maidstone.*—The derangement of the urinals alluded to in last year's report has been remedied. Some insanitary conditions have been brought to notice and prompt measures taken for their removal. A new mortuary has been built and the old one converted into a much-needed store.

"*Brighton.*—The hospital is in every respect an unsatisfactory one. It is badly situated and deficient in ordinary accommodation and convenience; there is no possibility of isolating special cases. Representations have been made locally on the subject.

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"The pressing need of soldiers for active and foreign service has interfered materially with the supervision medical officers have been directed to exercise over recruits, many having been sent to join the service companies before they had been even a month enlisted. G.O. 133 of 1880, restricting the instruction in gymnastics to recruits who have passed their drill and recruits' musketry course, has had an important effect upon the attendance at the gymnasia. Many recruits never go through the course of instruction at all. In my opinion the rule might be relaxed with advantage." *United Kingdom.*

Chatham.

Deputy Surgeon-General T. W. Fox, M.B., reports:—"The general health of the troops in this district has been good; the per-centage of sick to strength was 4·2, being somewhat lower than last year. No special or serious cause of disease was noticeable, with the exception of venereal complaints, which were more numerous than last year; this may be partly attributable to the repeated changes of regiments, the large number of men drafted from other stations and depôts to fill up regiments going on foreign service, and to the surrounding towns in the district not being under the Contagious Diseases Act.

"At Chatham there is a gymnasium, and the condition of the recruits passed through the course of instruction has been favourably reported on.

"The accommodation for troops in barracks and hospital has been sufficient at Chatham and Sheerness, but at Gravesend the hospital is unsuited for the requirements of the station, is very old and badly situated. A new hospital, already sanctioned, should be erected as soon as possible.

"The sanitary condition of the various barracks, quarters, &c. is satisfactory.

"The following sanitary improvements have been effected during the year:—

"*Chatham, Brompton Barracks.*—Improving ventilation; providing double sashes to windows, north side of officers' mess; ventilating soil pipes in officers' quarters; altering foul air pipes and valves in waterclosets.

"*Chatham Barracks.*—Increasing tap-room accommodation in canteen; remodelling sergeants' mess; providing urinals in district offices; enlarging prisoners' room at north guard; improving prisoners' room at main guard, and improving drainage generally.

"*Station Hospital, Fort Pitt.*—Providing a Flavel's kitchener in lieu of gas stove in hospital kitchen; converting part of old cook-house in casemates into an ablution room.

"*St. Mary's Barracks.*—Ventilation under floors of soldiers' quarters; providing footpans in ablution rooms.

"*Upnor Barracks.*—Extending main drain to low-water mark; providing water supply cistern and ash-bin.

"*Tilbury Fort.*—Trapping and ventilating drains.

"*Sheerness.*—Providing tanks to officers' quarters; laying on water to boilers and sinks at sergeants' mess.

"Several sanitary improvements have been recommended to be executed during the ensuing year."

Home District.

Deputy Surgeon-General F. Holton, M.B., reports that "the general health of the troops in the Home District under my supervision has been good throughout the year.

"No case of measles, scarlet or enteric fever occurred among the men, although several cases of the first two diseases appeared amongst the children.

"A considerable increase has taken place in venereal disease; this is most marked at Hounslow.

"The barracks generally are in good sanitary condition. I have to repeat what I said in my last report about the rooms in the new barracks; they are too long and not sufficiently warmed during the winter.

"The protection of the water pipes in time of frost is greatly needed at all stations.

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United Kingdom.

"Nothing has yet been done to provide hospital accommodation for women and children at Hounslow.

"The double sashes put into the windows of the hospital at Kingston have been found very satisfactory. I have recommended that they should be put into the other hospitals."

Woolwich District.

Deputy Surgeon-General F. Holton, M.B., reports that "it is satisfactory to be able to report on the good general sanitary condition of the barracks as evidenced by the absence of diseases usually arising from defects of this nature. No case of enteric fever occurred during the year.

"The steady increase of venereal disease must be noted with dissatisfaction, and I fear under present circumstances an improvement can scarcely be looked for. The beginning of the year was characterised by severe weather, and necessarily gave rise to bronchial and lung affections.

"The sanitary condition of the Herbert Hospital is all that can be required, as is that of the Government married quarters. The number of married families with and without leave who reside in private buildings are not so well off, and from these arise a number of diseases incidental to children, such as measels, scarlet fever, &c., generally more or less prevalent in the vicinity.

"The following are the principal sanitary services executed by the Royal Engineer Department during the year:—

"1. A new outfall drain has been constructed on the west of the Artillery Barracks to improve the drainage of the officers' quarters, West Square, the basements were not efficiently drained before.

"2. The waste pipes of all baths in the Royal Military Academy have been disconnected from the drains.

"3. A watercloset in the military foreman of works' quarter, Cambridge Barracks, which possessed no independent ventilation, has been removed and a new one constructed in rear of the quarters.

"In addition to the above, the annual sum allowed for sanitary services, viz., 300*l.*, has been expended in supplying separate cisterns, in the ventilation of the soil pipes of waterclosets, and in the alteration of wastes from cisterns at the officers' quarters on the common and at the Cambridge and Red Barracks."

Southern District.

Surgeon-General J. Woolfryes, C.B., C.M.G., reports that "no insanitary causes are stated in the reports of subordinate officers as having affected the health of the troops, and this is in accordance with my own observations and experience and with the result of my inspections.

"There have been no alterations in respect of increased cubic accommodation in barracks and hospitals, nor in the ventilation of these.

"Increased facilities for ablution have been provided at Fort Rowner.

"There have been no alterations in the scale of the soldiers' diets, and no changes in the clothing of the troops.

"The drainage of barracks and hospitals where not effective has been remedied, and the conditions of their vicinities in this respect is satisfactory,

"The effects of the training on the health of the troops where gymnasia exist have been beneficial."

Netley.

"Surgeon-General D. R. Mackinnon reports:—"During 1880 the admissions of foreign invalids into the hospital have been 636 below those of the previous year. The invaliding, however, has been high, but the statistics have been complicated with the Afghan War, many of the men serving in regiments in that country having been found unfit to take the field who, in peace time, might have continued to serve on.

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"The East, as usual, contributed the bulk of admissions, 2,386 arrivals taking place from India and thus constituting 76 per cent. of the total sickness. *United Kingdom.*

"The proportion discharged to duty, 414·0, is considerably below that of the previous year, and below the average of the years extending from 1870 to 1879; on the other hand, the number discharged the service, 477·4, is higher than that in 1879 and exceeding the average, 464·0.

"The deaths were few, the proportion of deaths to treated being nearly the same as in 1878 and 1879,

"The excess in 1879 was referable to the disturbances at the Cape, and that of 1880 to the war in Afghanistan.

"*Arrival of Steam Transports.*—The 'Malabar' arrived on the 17th April bringing 433 invalids; the 'Jumna' on the 15th May with 426; and the 'Euphrates' on the 24th of the same month conveying 372. The pressure at this time was great on all the medical officers to complete the necessary documents, dispose of the invalids, and to make room for fresh arrivals. The men of the Army Hospital Corps were turned out of their barracks and placed under canvas to make room for the married families. The highest number of sick was 1,157 on the 24th of May, while the occupation is only for 958 beds; but by placing extra beds in one-half the hospital the accommodation can be extended to 1,046. It can be easily understood, therefore, that there was more or less crowding during the period in question, but as it was but for a short time, no ill consequences followed.

"*Sanitary Requirements and Defects.*—1. There is a vacant space over the main entrance of the Royal Victoria Hospital which requires to be completed with the Royal Arms.

"2. No wards to isolate infectious cases amongst the men, *e.g.*, small-pox, scarlatina, erysipelas, &c. exist.

"3. No means exist to isolate infectious cases amongst the women and children, *e.g.*, diphtheria, measles, whooping cough, &c.

"4. Quarters for sick officers uninhabitable since the fire on 4th March 1880.

"5. An orphanage with quarters for the female superintendent is required. The present room is badly placed between the canteen and latrine; the accommodation for the nurse is screened by curtains.

"6. A female hospital with modern sanitary conveniences to be erected in the vicinity of the cottages.

"7. Increased space for the museum which is a valuable one.

"8. Latrine accommodation in the depôt and for the Army Hospital Corps is badly constructed and gives rise to foul odours. The latrine accommodation for the married families is also objectionable and the site bad. Latrine accommodation at the cottages is insufficient.

"9. Water supply for families objectionably situated close to the latrines.

"10. Accommodation for medical candidates to be erected in the vicinity of the mess block, with quarters for the mess sergeant.

"11. No water laid on in ward baths, nor in some of the lavatory basins.

"12. Bakery unhealthy and badly situated near the mortuary and depôt latrine.

"13. Insufficient accommodation for families of sick soldiers.

"14. Communication to be established between the hospital and railway.

"The Royal Victoria Hospital not having been originally constructed for the accommodation of a time expired depôt, many rooms have consequently been misappropriated and thus given rise to some of the above mentioned deficiencies.

"*Lunatic Hospital Deficiencies.*—1. An extra day room to separate dangerous cases from convalescents. This recommendation has been made annually by the Lunacy Commissioners, but without result.

"2. The North-west airing ground requires to be re-turfed.

"3. A billiard table would be an advantage in the officers' sitting room.

"*Medical School.*—An increase of accommodation is required in the Hygienic and Pathological Laboratories.

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United Kingdom.

"*Water Supply.*—During the winter there was some difficulty in obtaining the necessary supply in hospital and at the cottages on account of the freezing and bursting of the pipes. No actual want was complained of. Generally the quantity has been abundant and the quality fair.

Western District.

Deputy Surgeon-General J. Lamprey, M.B., reports :—"The general state of health of the troops and of their families has been good. The prevailing diseases have been venereal and diseases of the respiratory organs. No epidemic prevailed, but measles of a less severe type than during the previous year was prevalent in some sub-districts among the children, a few cases of scarlet fever also occurred, that this disease did not spread was owing to the careful precautions taken in the way of disinfection and isolation of the infected.

"The general impression with regard to the prevalence of venereal diseases is, that it would be greatly diminished by the introduction of the Contagious Diseases Act into military stations now unprotected by it. The three towns, Devonport, Stonehouse, and Plymouth are the only places in the Western District where the Act is in force, and were it not so, having in view the low state of morality these places are proverbial for, the prevalence of the disease must have been much greater than it is.

"The alterations made in barracks in the way of sanitary improvements, though not extensive, were sufficient to meet immediate sanitary requirements. New latrines, urinals, and ash pits have been constructed and taken into use at Pendennis Castle. Alterations have been made in the structure of the old barrack at Trowbridge and improved accommodation has been the result, a new building is also in course of construction there. A new system of drainage in connexion with the town drainage has been completed for the barracks at Brecon. The tidal creek between Devonport and Stonehouse has been protected from direct pollution by sewage from populous neighbourhoods on each side by costly main drains, which now carry the sewage to a distance and empty it into deep water. The means of ablution are satisfactory throughout the district. New cooking arrangements have been made at Topsham. The dietary has been good and the clothing of the troops has been suitable to the climate and season. Drainage works are required at the temporary camping place at Hay and Okehampton, to obviate the great inconvenience arising from excessive rain. Last year the weather being fine, little or no inconvenience was experienced in these places.

"The general effect of the gymnastic training has been beneficial."

Northern District.

Deputy Surgeon-General J. P. Cunningham, M.D., reports :—"There has been no important sanitary defect at the stations in the Northern District by which the rate of sickness and its consequences has been increased, nor has any epidemic sickness prevailed to a serious extent.

"New brigade depôt barracks and hospitals have been opened at Lancaster, Leicester, Lichfield, and Shrewsbury during the year. The latest improvements in sanitation have been adopted in the construction of these barracks and hospitals, and in the absence of any report to the contrary I assume that the arrangements are found complete and satisfactory in every respect.

"The hospital accommodation is exceedingly limited at many of the stations in the district, and great pressure is felt to provide suitably for the proper treatment of the sick when the militia are up for training, especially at York, Weedon, Birmingham, Chester, and Bradford. A new hospital has been erected at Northampton and another at Leeds is being reconstructed.

"Having in view the increased strength of the troops at York, and the still further number of both regulars and militia that are likely to be stationed there, together with the fact that the existing hospital accommodation is

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insufficient for the present strength of the troops, a recommendation to provide further accommodation will be submitted to the military authorities forthwith." *United Kingdom.*

North British District.

Deputy Surgeon-General J. O'Nial, C.B., reports:—"I took over charge of the North British District from Deputy Surgeon-General Fox on the 6th January 1881, and consequently was not in charge of it during any portion of the period comprised in this report. As I have not yet had an opportunity of making an inspection of the several out-stations, my personal knowledge is confined to the Castle, Edinburgh, Piershill, and Leith Fort. For all information concerning the other stations I am indebted to the reports of the several medical officers in charge.

"*Edinburgh Castle.*—The barracks and hospital in the Castle, Edinburgh, though old, are reported to be, on the whole, in a satisfactory sanitary condition and kept in good order. The cookhouse of the barracks in Crown Square has been found inconveniently small, its enlargement by the removal of a partition and the addition thereby of another room has been sanctioned, and will be shortly carried out. The kitchen of the sergeants' mess is also to be enlarged in a similar manner.

"*Piershill.*—The urinals complained of last year are still objectionable, frequently getting out of order—some of them are at present under repair—it is, however, promised that the repairs will shortly be completed. The manége is at present covered with snow, and I am unable to give any opinion about it, but I am informed that under ordinary circumstances it is a sea of mud. Its drainage was included in the estimates for 1881–2, but was struck out by the War Office for want of funds. A boiler for heating water for the men's baths, very necessary, especially in a cavalry regiment, was also included in the estimates for 1881–2, and was struck out by the War Office as was also the estimate for an inspection room for recruits. The inspections are now made in the surgery, which is very small, is dark, and unsuited to the purpose.

"*Leith Fort.*—No complaint is made of barracks or hospital arrangements at Leith Fort, they appear to be in a good sanitary condition.

"*Glencorse.*—The ventilation of the guardroom lock-up has been complained of. The matter has been brought under notice, and its improvement will be included in the next estimates. The old Douglas Barracks have been burnt down by an accidental fire since the medical officer sent in his report.

"*Perth.*—The medical officer in charge reports the barracks and hospital accommodation as satisfactory with the following exceptions:—He states that the latrines and urinals of the east wing are too far from the barrack rooms and too near the hospital, He reports that inconvenience results from the freezing of the water in the pipes of the lavatories and latrines, but this appears to be universal throughout the country, and to be unavoidable. A boiler for the bath-room of the west wing for the purpose of heating water for baths for recruits, recommended by the Principal Medical Officer, was included in the Annual Barrack Estimates for 1881–2.

"*Aberdeen.*—The medical officer in charge reports the barrack and hospital accommodation as sufficient and the general sanitary condition satisfactory. The families are still quartered in hired houses in the town at an inconvenient distance from the barracks; but new quarters for 35 families are in course of construction. The gymnasium of the Artillery Volunteers is used for the troops of the line.

"*Fort George.*—The mortuary is still complained of, the construction of a new one was included in the estimates for 1881–2. The inconvenience hitherto complained of in having to bring water to the hospital from the barrack tanks has been removed by the construction of a special tank for the hospital. The hospital cooking stove has been frequently out of repair. A new one has been applied for.

"The medical officer reports that the drainage, owing to want of sufficient elevation above the sea, is difficult, but that great attention has been paid to the matter.

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United Kingdom.

"*Maryhill, Glasgow.*—The medical officer reports that the barracks are in a satisfactory sanitary condition, with the exception of the drainage into the Possil Burn; at one time the night urinals got into an insanitary condition, but the defect was remedied, and greater attention being paid, it did not recur. The gymnasium has proved a success—12 non-commissioned officers, 142 duty men, and 242 recruits were put through the course with advantage to their general health and physique. 'The duty men on an average gained 1 lb. in weight and 7/10ths inch chest measurement, and the recruits 2 lbs. in weight and 1 1/5th inch in chest measurement.'

"The hospital has been enclosed during the year by a parapet wall and railing, and the ground is to be laid out as a garden. All the hospital arrangements are reported satisfactory except the contagious diseases ward, which is deficient in watercloset, urinal, bath-room, and lavatory. The patients have to use those belonging to other wards and are exposed to wet during rainy weather. The water is reported as excellent and abundant, a small boiler in the kitchen keeps the water in a tank in the garret of the hospital, hot, and from the tank it is laid on to the baths. The pipes are also so arranged that they aid in keeping the hospital warm.

"The insufficiency of the waterclosets, complained of in last year's report, has been made good; an additional one has been constructed and the accommodation is now sufficient.

"*Stirling.*—The sergeants' mess was found to be too small and otherwise unsuited, a new one is now in course of construction. The canteen and tap-room are also bad, the rooms being low and too small; new ones have been estimated for and their construction sanctioned. The medical officer reports other matters as satisfactory, he writes of the hospital that 'being old and small, 'repairs are frequently necessary, but, on the whole, its condition is satisfac-'tory and its equipment sufficient for the wants of the troops at the station.'

"*Ayr.*—The barracks were vacated for repairs in August 1872 and were re-occupied on the 22nd March 1880.

"The civil medical officer now in charge has reported the prisoners' room as badly ventilated. The matter is at present under consideration, and measures for its improvement will be adopted. A new mortuary, provision store, and foul linen store are very much needed.

"*Rations.*—The rations, both barrack and hospital, are reported as good and sufficient.

"*Canteens.*—The canteens and their supplies are good.

"*Clothing and Bedding.*—The clothing and bedding have been good and sufficient; an extra blanket is issued in the winter months.

"*Water Supply.*—The water supply is reported good and abundant."

Dublin District.

Deputy Surgeon-General J. E. Moffatt observes:—"The sanitary condition of barracks throughout the Dublin district has been reported generally satisfactory, and in no case has any outbreak of disease been attributed to preventible causes, except a few cases of diarrhœa ascribed to hardness of the water at Boyle, also some cases of enteric fever, which I think were preventible, and were directly traceable to the imperfect sewage in the Royal Barracks, Dublin. When waterclosets are placed inside houses or quarters, and when main drains are led under such houses or quarters, with rat-holes and broken pipes to form communication between the drains and the interior of the houses, the occurrence of enteric fever is at least a matter of time. I recommended all waterclosets to be put outside, the main drain pipes to be relaid in concrete, and the interior of all the quarters where enteric fever had occurred to have the soil removed to a depth of two feet. With reference to the cases which have occurred at Island Bridge, I do not think the drainage is at fault, but there are two systems of water supply in close proximity, one for drinking from the municipal pipes, the other for the horses and domestic purposes from the canal, and I should not wonder if the men drank or used the wrong water occasionally, notwithstanding the printed notice over the

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tap. This barrack is very unfavourably situated as it abuts on the Liffey, which may be described as a huge sewer. The insanitary condition of the vicinity of the Royal and Island Bridge Barracks in Dublin, though not directly stated by the medical officer to do so, must have a prejudicial effect on the health of the troops. Although in no instance has it been clearly shown that disease has been imported by men living out of barracks, yet attention is particularly drawn by the medical officers at Newbridge and Portobello, to which I would add the Royal Barracks, Dublin, Castlebar, and Longford, to the want of sufficient accommodation for married soldiers.

"The water supply at Birr has been condemned as unfit for drinking without careful filtration, but as I am doubtful of the possibility of satisfactorily filtering so large a quantity of water, I recommended another source of supply to be found if possible, or failing in that, to isolate the water in the spring from its surroundings. It is a spring in a large quarry hole, covering, perhaps, a quarter of an acre of ground, enclosed, but liable to have dust and organic matter blown into it, and full of aquatic plants. In the centre of this is a pump worked by a windmill.

"Overcrowding has been general throughout the district to a slight extent during the latter months of the year in consequence of the disturbed state of the country demanding a larger force than usual, and I do not consider it has exercised a prejudicial effect upon the health of the troops. After my half-yearly inspection I drew the attention of the general officer commanding to the overcrowding at Athlone, Birr, and Castlebar, which has been rectified as far as possible.

"The latrines at the Curragh have not been quite satisfactory owing to the quantity of water used in cleaning them, they are on the dry-earth system, but I found it had degenerated into a wet system, and that the soil all round and outside them was becoming saturated with fluid organic matter, without any drains to carry it off; orders have now been given that no water whatever is to be used but only dry earth to be thrown into the large iron receptacles. I may here remark that wherever the Moule's earth closet is in use for any length of time in a barrack it becomes quite useless, the iron bearings of the hopper get rusted and clogged with the clay, and rarely deliver more than a spoonful of the deodorizer, and soldiers will never take the slightest trouble to work the thing once they rise from the seat.

"*Sanitary improvements during the year:—*

"*Oughterard.*—Ablution room provided.

"*Carlow.*—Ventilation improved in barracks.

"*Galway.*—New barracks and hospital completed and handed over; accommodation for 12 officers, 11 sergeants, 31 married soldiers, 176 men, and 29 patients.

"*Athlone.*—Water supply increased and improved; guard room and prisoners' room enlarged, and watercloset for guard provided; new ablution and bath room erected; store water tanks and filter beds covered in.

"*Mullingar.*—New married quarters completed and opened; canteen enlarged and water laid on to wash-house.

"*Sligo.*—Warren's cooking apparatus provided.

"*Birr.*—New watercloset in B officers' quarters provided; two new urinals erected; drainage generally improved.

"*Dublin. Garrison cells.*—Floors boarded.

"*Royal Barracks.*—Servants' watercloset provided in Deputy Assistant Adjutant-General's quarters; old pattern ventilating grates altered; canteen enlarged and improved; ventilation and drainage improved in E. and F. officers' quarters.

"*Beggars' Bush Barracks.*—Separate waterclosets provided for infants, grown boys and grown girls; new infant school provided.

"*Marshalsea Barracks.*—Ash pit near officers' quarters removed.

"*Portobello Barracks.*—Canteen enlarged and improved; ventilators fixed in roof of small-pox ward; kitchen range with oven and boilers provided in provost cells.

"*Richmond Barracks.*—Drainage improved from ablution rooms and women's wash house; old hospital converted into sergeants' mess.

"*Royal Infirmary, Mortuary.*—Sink provided, water laid on, and new table.

"*Carlow.*—Earth latrine for non-commissioned officers provided.

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United Kingdom.

"*Naas.*—Ventilation of officers' quarters improved; baths provided in men's ablution room and water laid on; drains provided for carrying off contents of urine tubs, slop-pails, &c.; ventilating grates provided in sergeants' rooms; 27 new married quarters completed, with infants' school, laundry, washouse, and men's and women's latrines, and handed over for occupation.

"*Castlebar.*—Cooking range provided in sergeants' mess.

"*Sanitary requirements:*—

"*Dublin, Beggars' Bush Barracks.*—Water laying on in the mortuary in hospital.

"*Linenhall Barracks.*—Fireplaces wanted instead of stoves in the rooms, as the latter are not conducive to good ventilation.

"*Longford.*—Married quarters are required, the married families at present have to live in lodgings in the town.

"*Sligo.*—Ablution and bath rooms required.

"*Naas.*—The medical officer strongly recommends the establishment of a gymnasium at this station.

"*Westport.*—Ablution and bath rooms required.

"*Carlow.*—The latrine accommodation is bad and requires reconstructing.

"*Gymnasia.*—No special report has been received, but I consider that the course of training has exercised a beneficial result on the health and physique of the recruits who have passed through it."

Belfast District.

Deputy Surgeon-General J. Sinclair, M.D., reports that:—"No sickness or mortality is attributed by the medical officer in charge of the various stations to insanitary conditions or surroundings. The accommodation, on the whole, may be considered satisfactory, the barracks are in good repair, the clothing and bedding ample, and the food is favourably reported on in quality, although an increased quantity of meat would improve the stamina of the young soldiers; the water supply has been sufficient.

"The proximity of the towns to the barracks in this district is very objectionable but unavoidable, necessitates continual supervision of the surrounding yards and premises, and renders it very difficult to keep out the infectious diseases of the civil population.

"*Belfast.*—Except one modern block in the cavalry barracks and one block for married soldiers, the barracks are old and by no means perfect; there are 12 huts in the barrack square, old and very bad, they cannot be dispensed with until new quarters are built, these will be commenced at once on a site recently selected in rear of present barracks as the War Office authorities object to the expense of a country site. Surgeon-Major McFarlane strongly recommends that the two blocks of officers' quarters at present unoccupied should be put into a proper state of repair and utilized as quarters or offices.

"There was a little overcrowding when the militia was out, and subsequently when the 63rd Brigade Depôt was augmented in strength, but this was unavoidable and no bad consequences have resulted.

"A new guard room on a large scale has been erected on the site of the old one. The bath and ablution accommodation is very inferior. Bath rooms should be much more inviting than they are, on a larger scale, and in cold weather the water should be warmed. Hot baths should be obtainable at a nominal charge, say ½*d.* or 1*d.*; as a rule the soldier's bath room is cold, wet, draughty, and cheerless; this is a subject well worthy the attention of those interested in the improvement of the soldier's condition.

"The cookhouses generally have no roof outlet for the steam, in many instances they are placed under the men's rooms. The bath accommodation is also the worst feature of the station hospital and consists of only one old slate bath on the ground floor, a fire has to be lighted whenever hot water is required. Baths and lavatories are required on each landing, and have been recommended in the estimates of the past three years without result. The ablution room is cold and inconvenient."

Newry.—Surgeon-Major Ramsay states:—"Two of the cells have been reported as unfit for occupation because they are fitted with close stools and wash basins communicating with the sewer, the soil pipe is trapped but the

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smell is at times very offensive, the stools and pipes should be removed and new cells built on a better plan. The water from the well at Lime Lodge is bad and its use has been interdicted for drinking and cooking, a pipe from the main should be laid on to this building. The canteen tap room requires additional ventilation, A contagious ward with disinfecting chamber is required to render the hospital efficient for treatment of infectious diseases.

"*Enniskillen.*—There is no accommodation for infectious diseases.

"*Camp, Newtownards*—No hospital accommodation has been provided at all, a hospital hut with kitchen and bath room should be added to the camp, at present a portion of the men's accommodation is used as a temporary measure.

"*Sanitary Improvements during the year :—*

"*Belfast, Infantry Barracks.*—A Dean's oven for 200 men provided in cook-house No. 1; guard room and prisoners' room enlarged; new pattern guard beds provided in guard room.

"*Dundalk.*—Hanging shelves provided in barrack rooms; drainage of married quarters relaid; ablution accommodation in hospital improved and covered way from wards to ablution room provided; cooking range renewed in hospital kitchen.

"*Londonderry.*—Ventilation improved in "A" house, field officer's quarters; officers' quarters, 10 ventilating grates renewed; mess waiters' room, ventilation improved; sink and tap provided in hospital surgery; branch pipes from water main renewed in barrack enclosure; men's latrines connected with force pump in ablution room.

"*Newry.*—Cooking ranges provided in "F," "G," and "H" non-commissioned officers' quarters; prisoners' room and women's wash-house re-converted.

Sanitary requirements :—

"*Armagh.*—A watercloset in "A" house, officers' quarters.

"*Belfast Infantry Barracks.*—Separate waterclosets for grown boys and girls.

"*Cavan*—The existing hospital privy cess-pits to be replaced with dry-earth closets.

"*Dundalk.*—Jennings' pans to be provided for hospital waterclosets.

"*Dunree Fort, Lough Swilly.*—Privy in master gunner's quarters to be replaced by an earth closet.

"*Enniskillen, Redoubt Hospital.*—Infectious ward provided.

"*Londonderry.*—Guard house latrine cisterns connected with force pump in cell yard; hospital enclosure wall and men's latrine screen wall repaired; servants' watercloset, officers' quarters "A" and "I" cisterns connected with force pump in rear.

"*Newry.*—Officers' waterclosets generally improved, foul air pipes fixed and water supply increased.

Cork District.

Deputy Surgeon-General J. L. Jameson reports that "the general health of the troops during the past year has been good, and the sanitary condition of the various barracks satisfactory. The average strength has been 5,801. Total admissions 4,983. Deaths 45. Ratio per 1,000 of strength admitted 858·98. Deaths 7·75. Invalids 14·99, and the average number of daily sick was 221·63.

"The diseases from which the admissions took place were mostly of the ordinary character, those of a serious or infectious nature were not frequent. At Buttevant, an outbreak of enteric fever occurred during the latter months; the cause was attributed to the use of impure water. Eighteen men and four children were affected, the wells had not been cleaned out for years, the season was unusually dry, the water in them became low and mud got stirred up. Recommendations were made that they be closed up for drinking and cooking purposes, and that a cess-pit and drains be examined; these were at once attended to. Steps are being taken to purify the water. At Tipperary, of five cases of enteric fever, four were believed to have been imported.

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"*Venereal Disease.*—The admissions were very numerous and much exceeded those which took place during the preceding year, having been about one third higher. They occurred at both "protected" and "non-protected" stations. Many of the cases were imported and the frequent movements have also probably contributed to their increase. The medical officers at Fermoy and Kinsale strongly advocate that the Act be extended to those stations. The following table shows the admissions for venereal disease, to strength per 1,000 at stations under the Act, also those not under it:—

Diseases.	Admissions to Strength per 1,000 at Stations.	
	Under the Act.	Not under the Act.
Primary syphilis - -	71·61	77·22
Gonorrhœa - - -	85·93	91·52

"*Overcrowding.*—In consequence of an increase of the troops in the district in the latter part of the year, there was some diminution of the cubic accommodation in the barracks at Tipperary, but it was notified by the military authorities that under present circumstances the regulated amount need not be adhered to.

"*Water Supply.*—At some stations the water supply was reported by the Professor of Military Hygiene, Netley, to be unfit for use, and in some instances to require filtration; in each instance arrangements were made for the supply of good water.

"*Sanitary Improvements during the year:*—

"*Kinsale.*—Ventilation of the tailor's shop improved, and a new earth closet constructed at the quartermaster's quarters.

"*Limerick.*—A cess-pit in Ordnance Barracks closed up; some drains in barracks connected with main drain outside.

"*Templemore.*—Filter tanks attached to wells in barracks.

"*Fermoy, Old Barracks,*—Underground drainage completed and connected with town main drain, a bath constructed in No. 5 ablution room, a stove fitted in prisoners' room, an earth closet constructed in schoolmaster's quarters.

"*Station Hospital.*—New water tank and ash bin provided, and the ventilation of mortuary improved.

"*Waterford.*—New latrines provided for guard at main gate and at barrack sergeant's quarters.

"*Cahir.*—Drainage improved; Dean's cooking apparatus substituted for old pattern.

"*Queenstown.*—Watercloset substituted for dry-earth latrine at station hospital.

"*Rations.*—Good, no alteration has been made in scale, the cooking has been sufficiently varied to maintain health.

"*Clothing.*—Unaltered, suitable to climate and season.

"*Drainage.*—Within precincts of barracks, generally approved of. In the vicinity of many of the stations are dirty, ill-drained, and at times offensive streets.

"*Gymnasia.*—There are four in the district, training has been attended with beneficial effects on health, and increased physical development."

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FOREIGN STATIONS.

SANITARY REPORT.

Gibraltar.

Surgeon-General W. Munro, C.B., observes :—"Medical officers report that the health of the men in their respective districts has been good during the year, that barrack accommodation has been sufficient, and that means of ablution, consisting of bath and ablution rooms attached to barracks, and of an excellent bathing place in the bay at the base of the Rock, have been ample. *Foreign Stations.*

"There has been no change in the extent of barrack or hospital accommodation during the year, the barracks are well ventilated, but some of the basement rooms in several are paved with stone and are without fire-places, but these defects are being gradually remedied. The hospital is large, well constructed, well lighted, warmed, and ventilated, and stands in an excellent position, it affords ample accommodation for the sick of the garrison.

"A special sanitary report drawn up by a committee on the sewerage system of the town of Gibraltar, has been submitted to the Director-General by me, in which it was pointed out that although the system is excellent the working of it is defective; to a certain extent this affects barracks and hospitals, but not by any means to the extent that it affects the town. The report has been referred by his Excellency the General Commanding to the Sanitary Commissioners who now have it under consideration, and if the recommendations contained therein be carried out much good will result to both civil and military.

"There is a large gymnasium in the station where the troops are regularly exercised with benefit to health and vigour, and in several of the barrack grounds there are horizontal bars and swinging ropes with which I often see the men amusing and exercising themselves.

"Food is good and sufficient, the clothing is suited to the climate, and duty is not prejudicial to health."

Malta.

Surgeon-General W. A. MacKinnon, C.B., reports that "the health of the troops serving in this Command during the year has been good, and the sanitary condition of the barracks and quarters occupied by them satisfactory. The superficial area being greatly increased at night during the hot weather by the men sleeping under canvas every alternate night.

"The following are the principal sanitary services which have been or will be completed during the year 1880–81.

"*Improvement in Light and Ventilation.*—The ventilation of the prisoners room and canteen, Verdala Barracks, has been improved. More ventilation has been given to the married quarters, 'C' block, Pembroke camp, and men's latrine at Lower St. Elmo Barracks.

"*Water Supply.*—Large water tanks have been supplied to the Inquisition Palace, Burmola Curtain, and San Francesco di Paolo, soldiers' quarters. Aqueduct water has been led into the tank of the warders' quarter, Military Prison, Corradino. Water supply provided to Colcarn Gate Guard and to the right flank, Sally Port Guard Latrine.

"*Lighting.*—Gas laid on to mess sergeants' quarters at Auberge de Castille, and married quarters, Upper St. Elmo. The gas supply improved in the barrack rooms at Floriana and Lower St. Elmo Barracks.

"*Latrine and Ablution Accommodation.*—An urinal provided at St. Angelo.

"*Drainage.*—The drainage of the married quarters, 'A' and 'B' blocks, Pembroke camp, improved.

"*Warming and Cooking.*—New ranges have been provided to provost sergeants' quarters at San Francesco di Paolo Barracks; staff sergeants' quarters,

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Foreign Stations.

No. 1, Fort Manvil; officers' mess kitchen, Auberge de Castille; commanding officers' quarters, No. 1, Str. Mezzodi; commanding officers' quarters, Piazza Magazine, Floriana; and to the principal storekeeper's quarters, No. 15, Str. Strettu.

"*Gymnasia.*—There are two gymnasia in the Command, one in Valletta, and the other in the Cottonera District, the course of training being attended with beneficial results.

"*The Malta Drainage Works* are now in progress under the independent charge of Lieutenant Tressider, R.E."

Cyprus.

Surgeon-Major F. Falwasser, the senior medical officer, reports that "no reference to any special cause of disease has been made in the several reports of medical officers. I may, however, mention that all concur with me in thinking that a Contagious Diseases Act is necessary to check the prevalence of venereal affections.

"The following sanitary improvements have been effected during the year:—

"1st. The substitution of wooden huts for tents in the camp at Polymedia.

"2nd. The tiling of the barracks at the depôt at Limassol, in lieu of wooden roofs.

"3rd. A great improvement in the rations, both bread and meat.

"4th. Certain restrictions put upon the sale of intoxicating liquors at Polymedia and Troados.

"5th. The erection of a stone walled hospital at Polymedia."

Dominion of Canada.

Deputy Surgeon-General J. Sheldon Furlong, M.D., reports:—"The several barracks, married quarters, and hospital have been generally in good sanitary condition, the exception is the married quarters in Royal Artillery Park, occupied by the non-commissioned officers. The prisoners' room in the same barrack is badly ventilated.

"The ventilation, warming, and lighting of the several quarters has been with the above exceptions satisfactory.

"The cooking has been good; water was laid on to No. 1 and 2 cookhouses in the citadel.

"No change has taken place in the clothing, which appears to be sufficient.

"Considerable improvements and alterations have been made in the latrines attached to the following buildings:—Infant school, hospital guard and married quarters, Royal Engineer yard, pavilion and barrack stores, clock tower (used as an infectious hospital for women and children), garrison library, commissariat office, Wellington Barracks, also in the same barracks increased school accommodation has been given.

"In the station hospital, the stewards' quarter, being close to the latrine, has been converted into a store, and the former store is used as a quarter.

"The drainage of the town has improved, and is being improved, but still there are complaints of the drainage about the South Barracks and Royal Artillery Park, the civil authorities have been moved on the subject.

"The following sanitary services have been proposed but have not yet been sanctioned.

"*Garrison Hospital.*—Provide conservatory in porch, convert condemned linen store into a washhouse, provide hut for infectious diseases, remodel the stores in wards, convert cook's room, condemned as a quarter, into a bath room for hot baths, being next the kitchen.

"*Royal Artillery Park.*—Provide canteen, the present one is quite unfit for the purpose; provide fives court, Wellington barracks, build a new Royal Engineer office, build officers' quarters and a mess establishment for citadel.

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"The sanitary officers for 1879–80 concur in the opinion that it is not advisable to continue the sale of spirits in the institute, they reason that the place is too small, and with little inducement to retain the men from the public houses, and that it is used principally as a place of call to procure a drink, especially when men are returning home, and have probably had enough elsewhere. I have heard the same remarks made by regimental officers. *Foreign Stations.*

"The subject is a difficult one; the question, would less spirits be drank if they were not sold at the institute? is the main one; if the place be only used as a house of call the answer would probably be in the affirmative, but if men were induced to remain there who otherwise would go to public houses, a negative answer might result. Probably, an independent inquiry would find this out. On the whole I am inclined to agree with the sanitary officers.

"The same officers object to the gymnasium and the course, they consider that the room has only been adopted for a gymnasium, is badly ventilated, and not supplied with all its requirements. That the course of three months is too severe and too long, and that it would be better in a sanitary point to shorten the course and train more men moderately. The number of men put through the course seems to be very small indeed, about 120 out of a garrison of 1,700, the room is certainly capable of improvement, and it would be a great advantage to train more men moderately, but at present no direct proof can be shown that the health of the men has been injuriously affected.

"A soldiers' club has been established in a central position by the General Officer Commanding, there is a reading room supplied with games of different kinds, and refreshments can be had, but no spirits or beer. It is managed by a committee chosen by the non-commissioned officers and men. A theatre is in the same building, where theatricals, music, and lectures are given. If properly supported, which it is trusted it may be, it will be a great boon to the garrison."

Bermuda.

Deputy Surgeon-General T. O'Leary reports that "during the summer months the rooms in the 'old' barracks at St. George's were relieved of seven men each, as overcrowding in this range existed. No improvement in the ventilation of hospitals, barrack rooms, or huts was called for. The facilities for ablution are ample, variety in cooking is already secured, and no alteration in the scale of diet was necessary. The clothing of the troops underwent no change it being well suited to the climate.

"The drainage of the camp at Prospect, of the station of St. George's, Boaz, and Ireland, called for no improvement, and the several hospitals are in an equally satisfactory state. A trifling defect in connexion with the hospital drain at Prospect was made good. The immediate vicinity of the several stations is satisfactory with respect to the sanitary condition, but the towns of St. George's and Hamilton are susceptible of improvement. This subject was officially represented in the proper quarter. No gymnasium exists at any of the stations."

West Indies.

Deputy Surgeon-General H. T. Reade, V.C., reports:—"The hospital buildings and accommodation in this Command would appear to be all that can be desired, the cubic space and superficial area is abundant, every attention is given to cleanliness and the preservation of health, and no case of sickness resulting from insanitary influences originated in the hospital.

"*Water Supply.*—The supply of water is ample, derived from stored rain water, rivers, and springs. The means of ablution are ample except at Demerara, at which station water is scarce.

"*Jamaica, Newcastle.*—A swimming bath is in course of construction; bathing parades are resorted to at stations where the sea coast or a river is within reasonable distance from the barracks.

"*Conservancy Arrangements.*—Satisfactory; at some stations the dry-earth system is in operation, it requires constant supervision.

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Foreign Stations.

"*Dieting.*—The quality of the supplies has been good. Preserved meat, palatable and wholesome, has been issued once a week.

"*Clothing.*—The clothing of the troops, I think, well adapted to the climate, but the serge frock would be preferable to the white drill.

"*Means of Recreation and Gymnasium.*—Recreation rooms, supplied with games, newspapers, &c. Outdoor amusements, such as quoits, skittles, and cricket. There are no gymnasia, a want which the General Officer Commanding has represented to the home authorities, and it has been introduced in the annual estimates.

"The following sanitary improvements have been carried out.

"*Barbados.*—Verandah to East End, Queen's House. Manure pits to the detached officers' quarters in garrison.

"*Dockyard Barracks, St. Ann's.*—Ridge ventilation. The men's latrine converted into earth closets.

"*Stone and Iron Barracks.*—Water supply to No. 1, Field Officers' quarters. Additional bath accommodation for officers. Water supply extended to west side of square for protection of buildings in case of fire,

"*Brick Barracks, 'A' Block.*—Urinals disconnected from water supply and two earth closets provided for staff sergeants' quarters.

"*Military Prison.*—Storm water drains altered to surface drains. Roof of washhouse ventilated. Main drain to be ventilated at four highest points.

"*Fire Master's Quarters.*—Water supply disconnecte d fromwatercloset. Tank provided and watercloset ventilated.

"*Ordnance Office.*—Two earth closets provided, and an ash bin for smith's shop.

"*Demerara.*—Water brought into Eve Leary Barracks and nine hydrants fixed. Baths fitted up in officers' quarters east and west wings.

"*Trinidad, St. James' Barracks.*—Dry-earth closet provided for Nos. 3 and 4 married quarters."

West Coast of Africa.

Surgeon-Major A. Johnston, the Senior Medical Officer, reports that "during the year the huts forming the temporary sanitarium at Leicester have been removed from the site first chosen to the higher site selected, viz., close to the summit of Leicester Peak, it consists of three huts in all, one, the men's hut, capable of holding 20, a one roomed staff sergeant's hut for two, and an officers' hut consisting of one room, with latrine and small kitchen shed adjoining. The new site being chosen between 800 and 900 feet higher than the former site will consequently be much more bracing. During the ensuing dry season I mean to take synchronous observation of the temperature at Leicester Peak and Tower Hill Barracks so as to determine the relative temperature of both places. The new site is further removed from a plentiful water supply, but there is a spring on the summit of the Peak which by blasting the surrounding rocks has been made more accessible, and will give a small supply of drinking water.

"The sanitary state of the troops on the coast has, on the whole, been satisfactory. During a portion of the year there has been slight overcrowding in the barracks at Sierra Leone, but towards the close of the year this state of matters was remedied by the removal of men to Leicester Peak sanitarium, and also to Cape Sierra Leone for musketry practice.

"At the close of the year the fresh meat issued to the troops daily was found to be infested with cysticercus cellulosus, I consequently ordered that the meat should be medically examined every morning before being issued, and it has been very often condemned since, sometimes for three and four days continuously, causing the too frequent issue of salt provisions to the troops. This disease appears to be very prevalent among the cattle in the colony, and I am afraid will be a serious thing for the troops here, especially the European officers, non-commissioned officers, their wives and families, if it continues. Other provisions are rising in price every day and can with difficulty be obtained.

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"Quarters for the medical officers are much required at Sierra Leone, there being only quarters for one medical officer in barracks, it is to be hoped that quarters may be built as proposed in the estimates from this station. A gymnasium for the men would also be a great desideratum." *Foreign Stations.*

Cape of Good Hope.

Deputy Surgeon-General J. L. Holloway, C.B., reports that:—"Owing to the demands made on the Royal Engineer Department during the year the sanitary improvements in the Command have been few, they are as follows:—

"*Cape Town.*—A new ablution room has been added which answers very well.

"*Pietermaritzburg.*—New married quarters are built and taken into use during the year.

"The kersey frock issued to the Royal Artillery, Army Service Corps, and Army Hospital Corps is too thick and hot for the summer months in Natal. As it is lined with thick white flannel, I would recommend that the lining be removed, when it would be suitable for the summer and quite warm enough for the winter months, or else the surge frock should be issued, as laid down in para. 1 (*b*) of the Royal Clothing Warrant for the Army Hospital Corps.

"The following is extracted from the report of the Senior Medical Officer, Cape Town, pressure of work in Natal having prevented my making any inspection this year in the Cape Colony:—

"*Cape Town.—Western District.*—The general arrangement and construction of the main barracks is unfavourable to thorough ventilation, but not prejudicial apparently to health. The men's latrines are faulty; until a better water supply is introduced they require to be frequently flushed with sea water. The married quarters are very comfortless, and are arranged in a manner entailing but little privacy—consisting of a row of "bunks" formed by corrugated iron partitions about 8 feet high on either side of a large room. Each "bunk" has a fair-sized window and ventilating surface above.

"A better water supply is much needed; but this is a defect from which the whole of Cape Town suffers. The lighting is bad, kerosine lamps should be supplied instead of candles in barracks, reading rooms, &c. The cooking arrangements are not good, American or other suitable stoves should be supplied.

"The Contagious Diseases Act should be re-introduced; it is in force at Simon's Town, but not in Cape Town since 1867. The rate of admissions for venereal disease is very high, nearly half of the admissions being due to this cause.

"Special accommodation for infectious diseases should be provided, also hospital accommodation for women and children."

St. Helena.

Surgeon-Major Gillespie, the Senior Medical Officer, reports that:—"During the past year the health of the troops has been very good; the sanitary condition of barracks and quarters is also noted as satisfactory."

Mauritius.

Brigade Surgeon E. J. Hopwood, the Senior Medical Officer, in his sanitary report for the year urges very strongly:—"The removal of the greater portion of the garrison from St. Louis to the sanitarium at Curepipe, which is situated 1,900 feet above the sea-level; he observes that there appears to be no military reason against such a step, and he regards it as the only radical change that is likely to affect the health of the troops. Large huts at the sanitarium have been completed, but at present there is no hospital there. Dr. Hopwood

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Foreign Stations.

points out that the site of the existing station hospital, although badly situated for its purpose, is exceedingly valuable for commercial purposes, and that its sale would more than cover the outlay for new barracks and hospital at Cure-pipe.

"The weather during the year has been dry and cool, with freedom from hurricanes."

"No gymnasia exist in the Command."

Ceylon.

Brigade Surgeon T. J. Murphy, M.D., the Senior Medical Officer, observes:—"The sanitary reports of medical officers have been favourable, I have recommended that the practice of boiling the drinking water at Galle (commenced in 1878 on the occurrence of enteric fever at that station) be continued until the new waterworks that have been projected are finished.

"The soldier's ration would be improved by a daily issue of English potatoes, they are now served out on three days weekly."

China and Straits Settlements.

Deputy Surgeon-General W. A. Thompson, M.B., reports:—"The following alterations and improvements have been effected during the year 1880 to barrack buildings at Hong Kong, viz.:—

"*Victoria Barracks.*—Erecting skittle alley. Fixing eaves gutters. Supplying pure water to bathing pond. Providing sun-blinds.

"*North Barracks.*—Enlarging non-commissioned officers' room, canteen, &c. Erecting skittle alley. Provision of a portico at Head-quarter House.

"*Hospital Ship 'Meanee.'*—Enlarging supply pipes to urinals.

"*At Penang* the following alterations and improvements have been effected:—The station hospital re-roofed, painted, and lime-washed. A medical officer's bungalow built near the hospital. The barrack bungalows re-roofed.

"The general sanitary condition of barracks and hospitals throughout the Command has been satisfactory.

"*Accommodation.*—The accommodation provided in barracks, guard-rooms, &c., throughout the Command, as also the cubic space, superficial area, and ventilation have been sufficient and satisfactory.

"*Latrines.*—General sanitary condition of latrines, urinals, and drains, satisfactory.

"*Rations.*—Good and sufficient, but the sameness of the meat ration requires special notice. Beef is the sole issue from year to year, this should be varied by an occasional issue of mutton, say once a week, or even once a fortnight. Mutton is not provided on the score of expense, but I am inclined to think, if careful inquiries were instituted, this article of food might be procured for the troops now-a-days at a less cost than formerly.

"*Gymnasium.*—In the gymnasium at Hong Kong the usual course of instruction is gone through, and, as a rule, with beneficial results. It is an open air gymnasium, and when the sun is powerful can only be used in the morning and evening. The provision of a roof is under consideration.

"*Hospitals.—Station Hospital Ship 'Meanee,' Hong Kong.*—In last year's report my predecessor alluded to a special boat which was being provided for conveyance of sick to the "Meanee." The officer in medical charge, Brigade Surgeon Hungerford, makes the following remarks regarding this boat under the head, "Conveyance of Sick":—'This is still carried on by ordinary boats, 'the special boat referred to in last year's report has turned out a failure, as 'she has been on several occasions, when a strong wind and tide were against 'her, carried a long distance to leeward of the hospital ship, and therefore 'cannot be used when most required, she is a comfortable boat and would be 'well adapted for the carriage of sick but seems too short and insufficiently 'provided with oars. A small steam launch would be the most satisfactory 'mode of conveyance, and would, I believe, be the means of saving money in

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'the end as the number of boats and crews now employed on hospital service would not be required.' *Foreign Stations.*

"For the improvement of the hospital ship the medical officer has recommended that latrines be provided on upper deck for convalescents; that iron bars be inserted in the ports to prevent accidents; and that the interior of the ship be painted more frequently than once in seven or eight years.

"I entirely concur in the above remarks regarding the steam launch and the recommendations for upper deck latrines, bars to ports, and more frequent painting. There can be no doubt however that it would be much more satisfactory in every way if a commodious military hospital with all the latest improvements was built on shore on a good site, and the hospital ship 'Meanee' done away with altogether.

"The supposed advantages of a floating hospital in this climate, viz., comparative coolness in the hot weather and isolation are more than counterbalanced by its many disadvantages, such as exposure to danger from typhoons, difficulty of communication with the shore in bad weather, and consequent inconvenience and discomfort to the sick requiring to be sent on board for treatment, no means of isolating men suffering from infectious diseases who have to be removed to Kowloon and placed in tents should the barracks there be occupied, no convenience for treating insane patients, considerable expense in keeping up a permanent boat service, in periodical repairs, moorings, wages of shipkeepers, &c.

"These disadvantages have been brought prominently to notice from time to time in previous reports by my predecessors, and I desire to bring them forward again with a view to the question of the selection of an appropriate site for the erection of a hospital on shore for the garrison of Victoria being taken into serious consideration.

"The 'Meanee' has been used for hospital purposes since 1868, permanently as a hospital since 1871, how long the hulk is warranted to last I cannot say, but it may be assumed that some structional deterioration takes place year by year.

"I therefore think that to take steps now towards obtaining a hospital on shore would not only be a wise but a most desirable proceeding.

"A hospital for women and children in Hong Kong is most urgently required, and the want of one has been pointed out in previous reports. Such an institution where suitable nourishment and proper nursing could be obtained would be a real boon to the families of soldiers serving in the Colony. The building might be constructed in the neighbourhood of the proposed new military hospital.

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INDIA.

Bengal.

Bengal.

Surgeon-General T. Crawford, M.D., reports :—

"*State of Barracks, Guardrooms, and Cells.*—Satisfactory, with the following exceptions :—

"1. *Military Prison, Lucknow.*—Cells require more ventilation.

"2. *Shahjehanpur.*—Married quarters have frequently been reported bad.

"3. *Chawabuttia.*—Married quarters insufficient.

"4. *Saugor.*—Four parallel rows of cots are objectionable. Stone and corrugated iron roofing makes the buildings unbearably hot.

"5. *Gwalior.*—Syce's lines are too near the Artillery Barracks.

Lighting.—"The lighting of barracks is generally by kerosine oil lamps, and is very satisfactory. At Rawal Pindi gas is laid on.

"*State of Latrines, Urinaries, Night Soil Trenches, Ablution Rooms, and Ashpits.*—The dry-earth system is universally adopted in the barrack and hospital latrines. It is carefully supervised, and its efficacy is undoubted. The only complaint is that the soldiers are careless in their use of dry earth, and the poudrette is often incompletely deodorized. The benefits of manure and cultivation are partial. In most cases the ordure is carried to an out of the way site, and only buried.

"Night urinaries require to be more convenient. In the upper storied barracks they are far removed from the men, and irregularities are practised.

"The ablution rooms and baths are ample and suitable. At Agra and other plain stations the disposal of the sullage water is difficult. Mostly it is scattered superficially around the drain mouth.

"There are no ashpits except temporary corners. The refuse sweepings are carted to a distance daily and burnt.

"*State of Drainage and Sewerage and General Sanitary Condition of the Vicinity of Barracks.*—The general drainage of all military cantonments in this Command continues surface only. It is remarked that the soil in India is generally suited for such a system rather than for subsoil drainage; but this is obviously inconsistent with the theory that disease is a direct product, not of superficial, but of subsoil damp. The annual rush of vegetation during the monsoon removes by healthy growth superficial impurity. Hence surface drainage can only be efficient to a limited extent. It is reported satisfactory if the storm water is carried from the immediate vicinity of the barracks; but epidemic as contrasted with local disease cannot be explained by such partial immunity from damp. The vicinity of no barracks in India can be properly called sanitary. Pythogenic conditions are in every neighbourhood abundant.

"*Means of Cooking and State of the Kitchens.*—There have been no complaints. A suggestion is made that more attention might be given to *feeding* animals for some weeks before slaughter, and that in most stations in the North-western Provinces and Punjab meat could be served as rations one day after being killed with great advantage. Bread is occasionally condemned for being "sour." The soldiers' gardens have not been flourishing, and vegetables in more variety are required. The expense of providing water is often considerable. At Kasauli, Pachmarhi, and other hill stations vegetable gardens are better cared for. At Peshawar, from deficient fodder and high prices of grain, the meat as issued was often extremely poor.

"*Rations.*—No change from former years.

"The continued indulgence of beer with a heavy meal at mid-day, both in the hot and cold seasons, is considered injurious. Heat apoplexy is commonly fatal at that time. Deputy Surgeon-General Gibbons is of opinion that no spirits should be issued at the canteen till after sundown. The "open" system was introduced in many canteens during the year. Instead of a daily maximum the soldier is at liberty to draw as much beer as he can pay for, provided he is sober in the opinion of the sergeant. So far the medical opinion appears to be that this leads to greater indulgence and disease; but the circumstances of the year were special, and it is premature to decide. The coffee shops have been generally well arranged, and supply a real want; but

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it does not appear that they have superseded the canteen. A cheap and light wine of local manufacture is what is really needed, if men could be induced to drink it and be satisfied with it. *Bengal.*

"*Water Supply, its Source, Quality, and Sufficiency.*—Although for many years every effort has been directed to secure the sanitary purity of drinking water, it is still under suspicion in the etiology of both cholera and enteric fever. The ordinary barrack filters are useful in a limited degree. If the water for them could be iced, it would, no doubt, be commonly used; but unfortunately it is warm compared to fresh well water; and there is no doubt but that the latter is largely preferred, drawn, and delivered, according to the custom of the country, under sanitary conditions which are more than suspicious.

"Of the water supply, Allahabad, Agra, Rawal Pindi, and Peshawar are deficient either in quantity or quality, and this diminished quantity affects the health of the soldier in many ways. At Allahabad, Agra, and Peshawar, the supply at hand is abundant, and the sources pure from the Ganges, Jumna, and Bara rivers, and it is simply a question of expense in delivery by iron pipes and self-acting hydrants. Considering that these stations have an unenviable notoriety for epidemic disease, and the improved health at other stations in which a protected water supply has been provided, the introduction of this sanitary necessity at these also seems urgently required. At Allahabad and Agra, capital cities, with flourishing municipalities, the waterworks would probably pay interest on the investment, and the Government share of the expense would not be incommensurate with the benefits derived by the troops. At Peshawar the necessity is very urgent, year after year epidemic disease prevails, and although in other respects sanitary improvements have been fairly tried, the water supply is still to a large extent from unprotected channels. At other stations on the North-western Frontier, the history of disease closely resembles that of Peshawar, and the water supply by open channels with surface pollution also exists. Deputy Surgeon-General A. C. C. de Renzy has carried his zealous endeavours to reform the water supply of the emigration districts in Assam to his new appointment in the Punjab Frontier Force, and it is to be hoped with equally favourable results. At Rawal Pindi it is not only a question of delivery, but of obtaining a sufficient supply. The station has increased so largely within the last 12 years that the small "Rawal" and "Sohan" rivers are scarcely sufficient for the garrison, railway, and city. The statistics of this cantonment have become so markedly unfavourable of late years that sanitary conditions need vigorous development. The drainage has already been largely increased; but surface growth and cultivation are necessary. So long as the impalpable dust which pervades everywhere is mixed with organic impurities unchanged by vegetable growth, disease germs must also bear fruit.

"*Quality of the Drinks and other Canteen Supplies.*—There has been no complaint of the quality of the canteen liquors. Beer brewed in the hills in India seems to be growing more into favour. The stations supplied by it are almost the entire North-western Provinces and the Punjab. The rum is distilled in India, and although pure, is very unsuited to the climate.

"The canteens have usually a small shop attached for the sale of groceries, tobacco, canned meats, and numerous petty supplies suited to families. The quality varies. In some corps the stores are obtained direct from England with great judgment and economy. In others the "coffee shop" is leased to a native. But in all it is useful, and saves the men and women from much exposure by getting their supplies near the barracks instead of a more distant bazaar.

"*Clothing, whether suited to Climate, Season, and State of Weather.*—Satisfactory. The only recommendation has been to substitute serge for cotton in Bengal proper, and this is desirable.

"Extra clothing and bedding is available if required. The newly arrived regiments are sometimes deficient in the railway on leaving Deolali, because until their arrival at a station extra blankets are not issued.

"*Hospital Accommodation, Ventilation, Overcrowding, &c.*—The sanitary condition of nearly all the hospitals in the Command is good. Stone slabs for flooring instead of the present porous brick is recommended. At Fyzabad an isolation ward is required. The lighting of all is by kerosine oil, and is

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Bengal.

good. At Peshawar the Right Infantry Hospital, which had been in use two years as a general hospital for the troops in Afghanistan was thoroughly disinfected, and left unoccupied pending general repairs. The construction of all the hospitals in the Command is satisfactory. Accommodation is generally ample and no overcrowding is permitted. At Rawal Pindi barracks were in use as hospitals both for Her Majesty's 8th Hussars and the 4th Battalion Rifle Brigade. At Cawnpore more accommodation is required, and at Morar both artillery and infantry hospitals require renewal. The introduction of station hospitals into the Bengal Presidency during the current year will call for new buildings or new additions in the stations last named, but not in others.

"*Character of Prevailing Diseases, whether apparently influenced by any of the preceding Conditions.*—The salient points in connexion with the prevalence or otherwise of disease in the Command during 1880 have been detailed in the statistical section. Their causation in respect of the preceding sanitary conditions has not been clearly debated in the annual reports of the administrative and executive medical officers. Their remarks generally affirm the view that climatic insalubrity is the foundation of general disease; and indulgence and dissipation the active cause of a large preponderance of local disease. In the former class local and remediable insanitary conditions are very rarely mentioned. In enteric fever the recorded observations show nothing conclusive in respect of water, infection, milk, dwellings, or food as a cause. In the most marked outbreak of the year which occurred in Her Majesty's 30th Regiment at Bareilly and Ranikhet, the medical officers report, which is remarkably precise and careful, states the origin to have been 'mainly through climatic influences acting on young soldiers, and that passing 'local conditions (referring to a march through a specially malarious district 'of the Terai) may have intensified and prolonged the disease, but did not in 'any way originate it.' Elsewhere the disease is spoken of as the 'seasoning 'fever of young soldiers.' Special reports on this disease are required, and those received in 1880 show that the greatest care was taken to elucidate such causes as are commonly accepted to be special factors of the disease, without success.

"The same may be said of cholera. The events of the year show that local incidence of the disease may be quite irrespective of local sanitary conditions, and this is equally true of one native village compared with another, as of one barrack compared with another. The proposal that a protected water supply confers a considerable immunity from cholera has been fortified by the statistics of the year among immigrant coolies to the tea gardens of Assam. Part of the journey is performed on river steamers; and, both while on board and when halted at depôt barracks, great mortality from epidemic cholera was frequent. Dr. de Renzy, who was then Deputy Surgeon-General of the district, advised self-acting taps and closed tanks for the drinking waters, and both for 1879 and 1880, during which the supply has been so protected, the annual stream of immigration has, as a body, been remarkably free from the disease.

"Further experience is required to establish the value of so simple an agent in repelling cholera outbreaks. The facts of the year as regards the appearance and course of the disease among British troops and the civil population offer nothing new. It was present in a very malignant form at Lucknow, each outbreak being very fatal, especially among the military prisoners. It also severely attacked the 22nd Regiment at Allahabad, the 9th Regiment at Peshawar, and other stations and corps in a lesser degree. The benefits derived from leaving the infected locality have again been plainly shown, but this should be done as soon as possible, and to as great a distance as possible. "Preparatory" camps in the neighbourhood of the infected barracks rarely produce any good effect. It would be more prudent to prepare a camp at a selected distant site as soon as the disease is reported in the city or district, and to remove the troops to it by railway at the earliest indication of disease in cantonment.

"The circumstances of the epidemic at Allahabad were plain as to the danger which is incurred by keeping the troops loitering about an infected locality, instead of immediately removing them to a sufficient distance; and the same may be said of the epidemic outbreaks of 1881.

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"Paroxysmal fevers were much less prevalent in 1880; but it cannot be said that this was due to improved sanitation in or around cantonments. It often happens that local conditions, more or less general, are dwelt upon in annual reports as favouring the development of a local miasm; and in this respect the drainage of barrack precincts is brought into undue prominence. Of course it is essential, both for the health and comfort of the soldier, that local sanitation should be strictly enforced, but its influence is very limited in comparison with the natural forces that are everywhere present in the production of disease causes, viz., overpowering heat and extreme cold, sometimes prolonged, sometimes quickly alternating; long-continued drought, with scant herbage and vegetation, followed by abundant moisture, profuse vegetable growth, and rapid decay; barren plains of vast extent, which for two thirds of the year grow nothing, and for the remainder are flooded from rivers and covered with a rank growth; natural drainage of immense areas unrelieved, and excess rainfall disappearing by soakage and sun evaporation only; perennial forests covering undergrowth and marsh land to which neither light nor air is free. These are the climatic influences from which proceed the physical changes which generate epidemic disease to which the European in India is subject. *Bengal.*

"The group of nervous diseases constitute an important subdivision of the local diseases, and are to a large extent influenced in their production and gravity by the conditions of a soldier's life in India. In this group are placed apoplexy and sunstroke, the former with 15 deaths and the latter with 86 in 1880. This great and most unnecessary fatality is largely due to intemperance. There are many circumstances of a soldier's life in the tropics which necessitate exposure to the sun, and aggravating circumstances of dress, disease, diet, duty, and discomfort are not wanting; but the opinion is very general that the main cause of heat apoplexy is repletion both of food and drink, which is superadded to heat. Food is of the same quantity and elements whether the thermometer is at 100° or 50°, and the soldier has the same dinner and beer whether he has to play cricket all day or whether he lies on his cot and smokes. The possibility of reducing the meat and increasing the vegetable ration according to season, the prohibition of spirits in the canteen at all hours, the substitution of more tea instead of beer, and greater relief on guard, are intimately associated with the diminution of apoplectic seizure in India. Such health conditions are decided without difficulty in civil life; but it is less easy to ordain self-denial for others than it is to practise it individually, and there are not wanting some to urge that the soldier must get a due proportion of stimulants at all risks to his health and life.

"The same remarks may be applied to the group of dietetic diseases which form so large a proportion of the sickness and mortality of the army in India. Admitting fully that many cases of dyspepsia, dysentery, diarrhœa, hepatitis, &c. are symptomatic both of organic and non-organic changes following general disease, yet there remains a very large proportion of the 7,854 admissions under this head, which, as the name implies, are diseases of the alimentary tract, and have their origin in mal-administration of food elements.

"The subject has engaged earnest attention on many occasions, and recently the diet of the British soldier in India was dwelt upon by the Army Sanitary Commission in a Memorandum relating to the rate of invaliding in Madras (13th March 1880). In paragraph 2 of the summary to this review it is stated 'that by the experience of medical officers much of the loss from invaliding 'in Indian climates is due to the continued action of habits of eating, drinking, and clothing . . . . . which are directly opposed to the requirements of those climates. In every one of these points improvements can be 'introduced. What is wanted, in fact, is not transference to India of the 'European method of rationing and management, but the adoption of a 'rational regimen for the British soldier adapted for Indian climates; possibly 'more than one such regimen would be required in different districts of the 'country.'

"Such a proposal is extremely plausible, and no one can doubt but that if diets of large bodies of soldiers could be made more suitable to the climate, a great proportion of disease under Group IX. would disappear. But the practical difficulties in the way are enormous, and even supposing that six or seven such suitable diets for India, from Colombo to Peshawar and Thayetmyo,

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Bengal.

could be arranged and enforced, the possibility of reduced dietetic diseases would still remain doubtful, because it is less what the soldier eats and drinks by order which produces disease, than that what he eats and drinks without order. Existing rations, so far as they go, are rarely condemned as unsuitable, the quantity and quality are rigidly inspected in the interests of the soldier; and although many have formed an opinion that the quantity is in excess, that the quality could be improved, that more variety is needed, and that the cooking is inferior, yet no evidence is on record that the soldier himself is of this opinion. On the contrary, that he eats not only all his rations, but a great deal more; and the same with his drink. And the Sanitary Commission do not state what is to be done if the soldier does not accept that view of a reduced diet.

"It is probable that the direct result would be to provide himself with a greater quantity of unwholesome food and drink than he does at present, and that disease would be increased, not diminished.

"As regards the soldier's clothing it has already been remarked that the medical officers with few exceptions are satisfied that the requirements of a soldier are fully met under present regulations. There are very few systems which cannot be improved; the real question is whether the invaliding would be permanently benefited by such improvements, and, even if it were, whether the national funds can be properly devoted to that end in an unlimited degree. It happens that the invaliding of the Bengal Army for 1880 for dietetic disease is exceedingly moderate. The admissions were at the ratio of 25·02 per 1,000, the deaths at 6 per 1,000, and the invaliding 4·18 per 1,000.

"In paragraph 2 of the Memorandum by the Army Sanitary Commission a suggestion is also made that 'good might result from circulating among 'troops some simple dietetic rules, and explaining their necessity.' This suggestion has already received attention from the Government of India. A prize of 100*l.* was offered for the best sanitary primer for the use of the British soldier in India, in which plain rules of diet would naturally find a place. Thirty-seven essays were submitted for competition, and were carefully examined by a committee, composed of the Surgeon-General, Her Majesty's Forces, the Surgeon-General with the Government of India, and Major Stewart, Assistant Quartermaster-General. Several of these essays were of unexceptionable merit, but the committee were unable to award any prize, because 'they all, 'more or less, contained theories regarding the causation of disease which are 'doubtful, and some of which are directly at variance with Indian experience. 'Their general tendency, moreover, is to exaggerate the dangers to health 'from local and climatic causes, and so to instil an unreasonable dread of 'Indian service.'

"The remarks of the Army Sanitary Commission do not appear to have been based on a sufficient appreciation of the fact that the main difficulty to be overcome in reducing dietetic disease in India is to induce the soldier to be self-denying, temperate, and careful individually. So far as the regulations are concerned, every forethought is given both as to what he should eat and drink and what he should avoid. But considerations of health are rarely balanced against temporary enjoyment, and sickness too often follows, not from want of due care by the authorities, but in spite of all rules, by the carelessness of the soldier himself."

Madras.

Madras.

Surgeon-General Sir Anthony Home, V.C., K.C.B., reports that:—"The health of the troops in the Command, with one exception, was good during the year.

"The favourable health results are due to the climatic conditions of the present year; epidemic disease, if not altogether absent, was in a minimum of prevalence; no case of cholera is returned, and sunstroke was comparatively infrequent. Paroxsymal fevers were not greatly prevalent, except in the Burmah division; for this division the returns show the not rare combination of a high rate of prevalence of sickness with a low rate of mortality and invaliding.

"*Barracks.*—The notices in the reports of insanitary conditions affecting the buildings in which the men are lodged are few. The following are the principal:—

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"*Fort St. George.*—The Administrative Medical Officer of the Circle reports strongly against the continued occupation of the casemated barracks in which the Royal Artillery of the garrison are quartered, on account of their being very hot, unventilated, and of insufficient capacity for the numbers in them. These defects exist, and the quarters are gloomy and incommodious, but it is necessary to recognise the fact that the men lodged in the casemates have been healthy, not in this year only, but for several successive years, and of the illnesses among them none show the influence of unwholesome lodging. The spacious and airy barracks adjoining, in the same Fort, all the rooms of which are exposed to the sea breeze, do not compare favourably with the casemate barracks in respect of the sickness accruing to those occupying them; perhaps the last named barracks afford a compensatory advantage for their gloominess in the absence of the chilling currents of air, which, passing over the bodies of sleeping men, originate disease in them. *Madras.*

"*Poonamallee.*—The barracks for the invalid depôt are being reconstructed.

"*Kamptee.*—The non-reformed blocks of the barrack buildings are exceedingly hot and uncomfortable residences; they are, however, rarely used, The Deputy Surgeon-General reports that the roofs (tiled) of the reconstructed blocks are insufficient to protect properly from the sun at this exceedingly hot and unhealthy station, otherwise the alterations effected have been very valuable. One block was remodelled in 1880.

"*Cannanore.—Malleapooram.*—The troops are lodged in the temporary accommodation provided for them after the destruction by fire of the barracks in 1879. The men have been healthy.

"*Burmah.—Tonghoo.*—The present barracks are badly placed for receiving the full benefit of the breeze; it is understood that new buildings have been sanctioned.

"*Guard Rooms, Prisoners' Rooms, and Cells.*—At Hyderabad a new cell was built for the barrack of Royal Artillery in the entrenchment; the space provided being 3,072 cubic and 192 superficial feet. A guard room was built for the rear guard of the same entrenchment. At Kamptee a new guard room was built for the infantry barrack, and new cells were also constructed there: in connexion with the latter a thermantidote will be used in the hot season. At Rangoon various minor alterations for improving the cells of the infantry barrack were made.

"*Latrines.*—The dry-earth system is in use at every station; conservancy servants are sufficient in number to work it efficiently; the arrangements for the removal and disposal of the soil are good, and the latrine buildings are in general well designed. These conditions seem to afford material agencies adequate for the avoidance of danger to health created by the necessary existence of latrines near their dwellings, used by large bodies of men. That the system in practice is as successful in this respect as it should be is doubtful, the continued presence of enteric fever at certain stations with conservancy arrangements apparently so perfect is alone sufficient to cause misgiving.

"During the year new latrines have been provided for the barracks of the Royal Artillery at Thayetmyo; those for the invalid depôt at Poonamallee have been reconstructed and improved. At Kamptee the latrines have been removed to a position to leeward of the infantry barracks; at Secunderabad separate latrines have been provided for each of the married quarters.

"*Baths and Washhouses.*—The provision made is favourably reported on in every instance.

"*Drainage.*—During the year the nuisance created by the drainage of the town at Madras has been greatly abated by the construction of a high level sewer into which the drain is pumped, eventually being delivered into the sea. At Thayetmyo the environs of the infantry barracks have been greatly improved by surface drainage. At Bangalore surface channels have also been made for the compound of the cavalry barracks, and the Damloor tank there has been partially bunded. An attempt to drain the marsh on the north side of the tank was also made. At Bellary the surface drainage of the infantry barrack is reported to be badly laid, and unequal in capacity to the carrying off of the rainfall, some of which lodges. The drainage of the surface of the environs of the infantry barrack at Rangoon is also reported to be quite insufficient.

"*Cooking.*—During the year a new cookhouse was provided for the battery

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Madras. of Royal Artillery at Thayetmyo, and at the same place an improved arrangement for the fireplaces, in the substitution of iron stands for brickwork, was made in the cookhouses of the infantry barrack.

"*Water Supply.*—As regards this vital subject in connexion with the preservation of health, the reports from all the stations are favourable save two.

"The horrible nature of the drainage which enters the drain or lake from which is taken indirectly the water supply of the garrison at Bangalore is again pointed out, but no evidence of observed ill consequences attending its use.

"The occurrence of an epidemic of enteric fever at Kamptee in the summer of the year under notice, nearly the entire incidence of which was amongst the men of the infantry there, and in them amongst the teetotallers or water drinkers of their number could not fail to arouse suspicion respecting the quality of the water used by those attacked. It was found that in addition to the drinking water drawn from a well in a protected situation, and filtered at the well before passing into the reservoir tank, owing to the limited supply of the best water, another well was set apart for cooking and other purposes. As follows unfailingly whenever two sources of water supply of different qualities are permitted, in time the injunctions restricting the inferior water to certain uses only were forgotten or were disregarded, the cooking well water at Kamptee being near the recreation room, where only the teetotallers of the regiment assembled, was used by them. On analysis the water from this well was found to be contaminated with organic matter, supposed from the amount of chlorine also found in it to be of animal origin. No more cases came forward after the well was closed. On examination the shaft of the well was found to have two openings, through which drainage evidently percolated; the well was only four paces from one of the washhouses in use, and the site of the latrines had till lately been at an inconsiderable distance from the well. More than one fallacy may be contained in the supposed proofs connecting the enteric fever outbreak with the use of the water of the suspected well. The case is one of presumption only, arrived at after the possibility of every other source of infection had been excluded. The strong point of the theory lies in the fact that the proportion of attacks amongst professed teetotallers was 1 in 7·5 of their number, whilst amongst non-teetotallers it was only 1 in 46.

"The doubtfulness of the purity of the present supply, taken in connexion with the comparative scarcity of water at Kamptee, is held to justify the recommendation of a proposed scheme by which water taken from another and better protected source would be delivered in the barracks by gravitation.

"*Canteens.*—Progress has been made during the year in the provision of buildings better fitted by their spaciousness and cheerfulness for the accommodation of the men in such comfort as they appreciate than the old canteens. New rooms have been occupied at the infantry barrack at Secunderabad, and a new canteen is nearly ready for the use of the infantry barrack at Rangoon. Many of the medical officers again record their belief as to the injury accruing from the optional allowance of spirits to be obtained at the canteen.

"*Hospitals.*—The hospital buildings in the Command are commonly in very good order, and sanitarily have been well cared for; no sickness originating in hospital defects has been recognised amongst the patients. An important concession was made during the year in the permission to use punkahs during the hot season for the whole 24 hours, should the administrative medical officer consider it necessary.

"At Kamptee and at Rangoon new hospitals are required for the infantry regiments respectively quartered at those places. One of the regiments at Thayetmyo supernumerary to the usual garrison used a converted barrack for a hospital, and the detachment at Malliapooram used a chapel temporarily."

Bombay.

Bombay. Surgeon-General J. M. S. Fogo, reports:—

"*Barracks.—Colaba.*—The artillery barracks are good, but the infantry barracks are on a lower ground, with only a few inches of plinth, are low-pitched, dark, gloomy, and with earthen floors.

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"*Ghizree.*—The sanitarium barracks at Ghizree have been condemned; they are ill adapted for the habitation of European soldiers for want of proper ventilation, absence of plinth, and from having earthen floors. It is believed that the new sanitarium, for which plans and estimates have been sanctioned, will be commenced immediately. *Bombay.*

"*Guard Rooms and Cells.—Colaba.*—The same remarks apply to the guard rooms here as to the barracks; those of the artillery are good, but those of the infantry are bad, being small, low, and having earthen floors. There is also insufficient protection from the sun, and the prisoners' room adjoining is similarly defective.

"*Aden.*—The guard room is a fine building, but it was found that the sentries were too much exposed to the sun's rays in hot weather, and on this being represented the large open space between the supports was boarded with advantage. The cells in the crater position at Aden, although ventilated, are hot, being built where they are, instead of at the more airy position of Steamer Point, where it is considered they should have been. Men undergo long sentences at this station.

"*Baroda.*—The guard room of the European Infantry does not afford sufficient accommodation for the number of men occupying it. The military authorities have been addressed on the subject, but the question of new barracks, &c. for Baroda has been for some time under consideration. The ventilation of the cells has been much improved.

"*Ventilation and Lighting.*—This is generally very satisfactory, the lighting being carried out by means of kerosine lamps.

"*Karachi.*—In the artillery barracks at this station the ventilation is not good, roof ventilation is not provided, and in two of the barracks the ridge of the sloping roof of the verandah of the lower story prevents the windows of the upper story being continued to the floor.

"*Flooring.*—Most of the barracks in the Presidency have stone floors, but some are still of earth only.

"*Ablution and Bath Accommodation.*—This is generally good throughout the Presidency.

"*Karachi.*—The lavatories for the use of patients in the hospital are most objectionably placed in the rear verandah in immediate contiguity to the wards.

"*Latrines and Urinals.*—All satisfactory, the dry-earth system being carried out.

"*Sanitary Condition of the Vicinity of Barracks and Stations.—Aden.*—The sanitary condition of the native town is bad, each house having its cesspool. A great defect at this station also is the want of some building for the reception of contagious diseases from the shipping.

"*Deolali.*—The latrine accommodation for natives is insufficient.

"*Belgaum.*—The condition of the valley between the artillery barracks and the other part of the station was noticed by the Deputy Surgeon-General at his annual inspection, who considered it was damp and chilly; and in a letter to the Deputy Assistant Adjutant-General, he stated his opinion that one of the causes of dampness was to be found in the quantity of marsh grass growing on both sides of the road, which had not only large heads but large roots, drainage from the patcherries on the hill slope above passes towards this grass, and moisture doubtless stagnates there in a manner it would not do if there were no roots to impede its progress. The Deputy Surgeon-General stated that he regarded this locality as a probable source of malarial influence, and suggested the marsh grass being rooted up.

"The state of the large filth deposits was also brought to the notice of the Brigadier at the same time, and it was recommended that the deposits should be buried, as in their present condition they are a standing menace to the health of Belgaum.

"*Karachi.*—On the west of the infantry barracks is the Sudder bazaar, which is not under military control; it is considered a source of danger to the troops, and the Deputy Surgeon-General has had occasion to complain of its defective sanitary condition to the civil authorities, There is a large mangrove swamp near the harbour at Karachi.

"*Water Supply.*—Is good throughout the Presidency, except at Karachi, where it is impure. The soil here is salt.

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Bombay.

"*Hospitals.—Colaba.*—There has been insufficient accommodation this year on account of the number of sick from Afghanistan. The ventilation is as good as the building and vicinity admit of. It is intended to build a new hospital when funds are available.

"*Deolali.*—The accommodation is insufficient for the trooping season, and has to be largely supplemented with tents. It is otherwise satisfactory.

"*Aden.*—The hospital at the crater position is an old bungalow indifferently ventilated, and the accommodation is sometimes insufficient. The hospital at Steamer Point is now the worst in the Bombay Presidency; it is a temporary building of bamboo and mud, with an earthen floor.

"*Ahmednagar.*—The hospital is good, but the building used as a female hospital is utterly unfit for the purpose; it is badly built, too small, and ill ventilated."

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APPENDIX.

APPENDIX No. I.

REPORT ON THE PROGRESS OF HYGIENE FOR THE CLOSE OF THE YEAR 1880.

By F. DE CHAUMONT, M.D., F.R.S., Surgeon-Major, Professor of Military Hygiene, Army Medical School, Netley.*

Work of Societies, Papers, Reports, &c.

1. Transactions of the Sanitary Institute of Great Britain, Vol. II., Exeter Congress, edited by H. Burdett and F. de Chaumont.

This forms the second volume of the transactions of the Institute, and was issued at the close of 1880, giving the report of the Congress which took place in September. Among the more important papers read were, the address by Earl Fortescue, which gave an excellent historical sketch of the progress of sanitation in this country during the last 40 years. "Notes on the spread of Diphtheria," by Edwyn Slade-King, M.D., containing many important facts which seem to point to a probability of the disease poison being borne through the air to considerable distances; "The Unhealthiness of Public Institutions," by Henry C. Burdett; "The Necessity and Importance of Mortuaries in Towns and Villages," by the same; "Sewage," by Lieut.-Colonel Alfred Jones, V.C.; "Some Deficiencies in our Knowledge respecting Health Resorts," by J. G. Symons, F.R.S.; and the "Sewerage of Memphis," by Colonel Waring, to which reference was made in my last report.

2. A very interesting and important paper has been published by Professor Max v. Pettenkofer, having been read before the Medical Society of Munich in April 1880. Its title is "On Cholera, and its relation to the Parasitic Theory." The author says he made his *début* on this question in 1854 by reading a paper on the "Ætiology of Cholera," and now, after the lapse of 26 years, he proposes to finish with his present contribution, bequeathing and recommending the continuance of the inquiry to younger minds. He takes this opportunity, seeing that the Cholera Commission for the German Empire has just recently finished its labours. That Commission held its first sitting in Berlin in the summer of 1873, just before the outbreak of the last epidemic of cholera which took place in Germany. The members of the Commission were Dr. Hirsch, of Berlin, Dr. Böger, Surgeon-General of the Prussian Army and Physician in Ordinary to the Emperor, Dr. Günther, of Dresden, and Dr. Volz, of Karlsruhe, with Professor M. v. Pettenkofer as chairman. In 1876 Dr. Böger died, and his place was filled by Dr. Mehlhausen, Medical Director of the Charité Hospital in Berlin. The labours of the Commission have since been published by Carl Heymann in Berlin in six parts, with maps, plans, tables, &c. towards the expenses of which the Office of the Imperial Chancellor has most liberally contributed. The writer does not propose to go into the contents of the different parts in detail, but merely to discuss how far the results of the investigations of the Commission find themselves in accordance with the fungus theory (Pilz-Theorie) which had formed the basis of the papers and discussions in the Medical Society during the present (1880) year. Although

* The tables of analysis of water made during the year 1880 have for the most part appeared in Vol. XXI., 1879.

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in the work of the Commission no mycological researches occur, and although they neither sought nor found a cholera fungus, yet the facts seemed clearly to indicate that the operation of some of the lowest forms of life must be admitted as at least probable, though the *modus operandi* remains still obscure, cholera must be reckoned among *infectious* diseases and there must be a cholera poison, the discovery of which remains for further research. The preliminary question is to decide where to seek for it. The causes of infectious diseases used to be divided into *contagia* and *miasmata*, whilst in more recent times the division has been into those which propagate *in* the body (entogenous) and those which propagate *outside* the body (ectogenous). The old dispute as to whether cholera belonged to the contagious (entogenous) or the miasmatic (ectogenous) has been pretty well decided (in Pettenkofer's opinion) by the labours of the Commission. And were this, says he, the only result it would well justify its creation. Whosoever reads the report carefully and thoroughly must admit that cholera, both in its home in India and in Europe, depends upon conditions of time and place, &c. altogether external to the body affected. Hirsch states the case succinctly thus, part 6, page 309: "If we, as "usual, designate by the name of contagion that mode of transmission of "infectious diseases, in which a poison is developed within the body of the "individual specifically attacked, or, in other words, an organic disease poison "is reproduced, which, when separated from the patient and transferred to "another individual susceptible of such disease poison, gives rise to an exactly "similar specific disease process,—a mode of transmission well recognised and "ascertained in small-pox, scarlet fever, typhus, &c.,—then shall we find, "according to the unprejudiced evidence of the mode of spread in the cholera "epidemic of 1873, no ground for referring cholera to the class of *contagious* "diseases." Further on, at page 312, he continues: "But if the theory of "direct contagion fails of proof, and since transmission of the disease takes "place without doubt, there remains only one of two views to be adopted, "viz., either 1st, that from a cholera patient an infectious substance is actually "thrown off, which, however, is not yet capable of acting directly as cholera-"poison, but only obtains its specific infecting influence after it has under-"gone a certain change, outside the system of the patient himself and under "the afore-mentioned external circumstances, either upon or in the soil (or a "*succedaneum* of the soil). This change may be considered a sort of ripening, "fructification, or impregnation, similar to what takes place in the ovum "under the influence of the seminal element. Or, 2nd, that the reproduction "of the cholera-poison takes place quite independent of the cholera stricken "individual (as such), seeing that it may attach itself to persons, sick or well, "or to other objects, through the instrumentality of which it may be carried "from place to place, and wherever it finds appropriate conditions for its "reproduction it may light up an epidemic. Both hypotheses are equally "admissible." Hirsch prefers the former of these hypotheses, Pettenkofer the latter. Pettenkofer adds that further inquiry and observation must decide which is the more accurate; in the meantime it is enough for him that the *local* or *topical* view has been thus definitively accepted.

Reference is next made to the general review of the spread of the epidemic in the whole of Germany, as given by Hirsch, and it is assumed that anyone, looking at the charts and observing the sharply defined limits of the localised epidemics, must come to the conclusion that mere intercourse with cholera cases or cholera stricken localities had nothing to do with the spread, but that the most important part was played by the locality itself to which the disease germ was brought.

The report of Günther on the cholera epidemic of Saxony is next referred to as further supporting this view. In the third part of the Commissioners' Report Günther has set forth the seasonal and topical spread of the disease for all the years in which it has shown itself in Saxony, viz., in 1836, '48, '49, '50, '54, '55, '65, '66, '67, '72, and 1873. The occurrence of the disease in the several months of this last year (1873) is shown in a graphic curve on page 10 of the text, and its occurrence in different localities is indicated on the map of the Kingdom of Saxony in the atlas. We can also see in these maps the gradual development of the railway system in Saxony, and answer for ourselves the question if cholera epidemics have shown any preference for fixing themselves along the railway lines, or have shown themselves more numerous or

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more severe with the increase of railway communication. The facts give a directly negative answer, which, says Pettenkofer, would not be the case if cholera really depended upon direct contagion. Günther's abstract of the results of his inquiries are given from p. 98 of the text, as follows:—

"The cholera epidemic of 1873 is *fourth* in severity, reckoning the number of victims, out of the *eight* which have invaded Saxony since 1836.

"The epidemic spread of cholera in Saxony has no relation to the spread of the railway system there.

"It attacked chiefly some villages in the immediate vicinity of Dresden and a few streets of the city, so that 89 per cent. of all the deaths are referable to the Dresden district, whereas out of all the previous deaths since 1836 only 10 per cent. belong to the same district.

"The first case in Niedergorbitz and the first in Groitzsch had intercourse with Magdeburg, where cholera already existed, and the first in Löbtau had intercourse with Magdeburg and the first in Grossröhrsdorf with Löbtau. In Dresden, however, in spite of the constant intercourse between the inhabitants of the affected villages and the city it was only after the lapse of six weeks that a restricted epidemic spread took place.

"The affected localities in Löbtau, Dresden, Groitzsch, and Grossröhrsdorf lie low and in proximity to a watercourse. The subsoil under the affected places is porous. The subsoil of the house No. 6 of the Geibergasse in Dresden, which was attacked in an unusual degree, was greatly polluted by the drainage of a large number of households.

"The height of the epidemic occurred earlier than usual, for whilst—

3·8 per cent. of all cholera deaths since 1836 took place in July.
20·0 „ „ „ August.
42·5 „ „ „ September.

in this last epidemic there died—

36·0 in July.
41·3 in August.
11·5 in September.

"The height of the epidemic in Dresden corresponded with the highest temperature of the air and also of the soil at the depth of 1 metre (3 feet 4 inches).

"As regards different ages the smallest number of cases and deaths, and the smallest relative mortality among those attacked took place between 10 and 20 years.

"In 62·2 per cent of the houses attacked only a single case occurred.

"In 79·1 per cent. of the houses with more than one case, an interval of less than 14 days took place between the first and the last case.

"In 66·1 per cent. of the fatal cases death took place in less than 24 hours."

Mehlhausen, in his able account of the cholera epidemic among the troops of the late North German "Bund," takes no side in the question. Ultimately, however, he accepted Hirsch's conclusion before mentioned, which also represented the opinion of the majority of the Commission.

The Report of Volz (Part 5, pp. 89–118) upon the cholera in Würtemberg, Baden, and Hesse, indicates the epidemic of Heilbronn as the central point of interest. Volz does not deny the influence of locality, but he attaches no more importance to it in cholera than in any other infectious disease, believing no material difference to exist between a cholera focus and a small-pox focus or between a cholera house and a small-pox house. He summarises his views very carefully, but, in the opinion of Pettenkofer, they go more to support the *localist* theory than the *contagious*.

The following are the conclusions given by Volz:—

"The following are the details and peculiarities presented by the cholera epidemic at Heilbronn.

"Sudden outbreak within a restricted area, in six houses and among seven individuals.

"No introduction of disease indicated.

"Simultaneous existence of cholera in North Germany, Vienna, Munich, and Würzburg.

"At the same time many gastric cases, diarrhœa and cholerine, occurred at Heilbronn, especially among children.

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"A case of cholera in Heilbronn 22 days previously, and 15 days previously residence of the convalescent in a house next to one of the houses in which the disease arose.

"Sudden spreading in the immediate and near neighbourhood following free intercourse, but otherwise restrictive regulations.

"Gradual spread of epidemic northwards under similar topical conditions.

"Immunity of that district of streets lying southwards but under similar conditions.

"Transmission of disease from the first cases to outlying streets and parts of the town without further spread, or the establishment of secondary foci.

"Transmission followed either immediately or within a longer interval by one or more cases of disease, sometimes even a house epidemic, but sometimes without any further spread.

"Transmission took place outwards into seven districts, always with death occurring; only in one parish did an epidemic arise; one transmission took place through a healthy person from a cholera house.

"In the town hospital (lying outside the cholera district) in which 84 cholera cases were treated, rigid isolation was practised; no house epidemic arose, and no other cases took place in any other part of the building.

"In an asylum for old people in the immediate neighbourhood a house epidemic followed on the occurrence of one case.

"For the determination of the incubation period some cases deserve notice, particularly those in Untereisesheim and Thalheim, a maximum of one day, that in Eschenau, three days, and the first case in Frankenbach, one day.

"The part of the town invaded, the cholera district, in fact, is the oldest and lies lowest on the river Neckar, with very unfavourable conditions of cleanliness. An old network of porous underground drains runs through it and round it.

"The subsoil consists of a stratum of gravel lying on coal shale (Lettenkohle), and upon it lies a stratum of loam, of varying thickness, 3–20 metres = (10–65 feet). The smallest thickness is in the neighbourhood of the Neckar, in the cholera district.

"In the upper town more open buildings, fewer drains, and thick loam stratum.

"The drinking water, drawn from the gravel layer, is pure.

"The summer of 1873 was dry, the Neckar low, the ground water dependent upon it deep, the latest previous rise having been 15 months previously.

"At the commencement of the epidemic, for 14 days, no energetic measures, free intercourse, but issue of disinfectants.

"From the third week onward removal of the inmates from cholera dwellings and fumigation of the latter with sulphur; from that time onwards immunity of dwellings so treated. No transmission of disease to the temporary station of the inmates which was at a distance from the cholera district.

"The epidemic attacked 192 persons, and killed 96. The height of the epidemic was in the first week, then stationary for two weeks, then decline. Duration of the whole epidemic from 26th August to 26th October, 62 days.

"More actual cases occurred among females, and fewer proportionate deaths, the proportions being 122 cases among females and 70 among males, whilst the deaths were 55 females and 41 males. The per-centage of females in the population is not known.

"No rank specially invaded, no medical man took the disease; of the attendants on the sick, 5 attacked and two died; none of the mortuary attendants attacked.

"The poorer class more severely visited."

Another report, which Hirsch has inserted in the 6th Part of the Commissioner's report, is that of Dr. Pistor, on the spread of cholera in the Prussian Province of Oppeln, during the period from 1831 to 1874, drawn up from official sources. Oppeln is a province which seems to have special attraction for cholera. Cholera caused the following numbers of cases and deaths:—

In 1831	-	-	-	1,658	cases and	993	deaths.
„ 1832	-	-	-	3,270	„	1,578	„
„ 1836	-	-	-	4,324	„	1,754	„
„ 1837	-	-	-	1,159	„	633	„
„ 1848	-	-	-	308	„	182	„
„ 1849	-	-	-	5,595	„	2,596	„

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In 1851	-	-	-	898	cases and	476	deaths.
„ 1852–3	-	-	-	3,856	„	2,073	„
„ 1855–6	-	-	-	5,498	„	2,778	„
„ 1866	-	-	-	9,069	„	3,888	„
„ 1867	-	-	-	4,438	„	1,947	„
„ 1872–3	-	-	-	2,332	„	1,157	„
„ 1874	-	-	-	2,499	„	1,274	„
Total	-	-	-	44,904		21,329	

The average population of the province during this period may be taken at about million.

Pistor has undertaken to give a graphic representation, as well as charts and tables compiled from the materials in the possession of the central and local authorities, of the topographical and chronological spread of the disease in this fruitful cholera ground, from its commencement in 1831 to the termination of the last epidemic in 1873–4. This he has done without hazarding any hypothesis whatever, in the belief that in this way more certain information will be obtained with reference to the particular susceptibility of different localities on the one hand and to immunity in general on the other, should these observations be confirmed and completed in any future epidemics in Upper Silesia.

His comprehensive work has led him to the following five conclusions:—

1. Epidemic cholera never originates as such in Upper Silesia, the germ seems to be always introduced.

2. It has a certain relation to human intercourse, but it does not cling to the lines of communication in such a way, for instance, as that places along the lines of railway are exceptionally attacked.

3. A cholera patient himself and his effects may be the means of planting the unknown cholera germ, provided it finds conditions favourable for its development.

4. The following circumstances appear to favour the development of the germ and the epidemic spread of cholera.

(*a.*) Greater density of population; in particular the crowding together of people in relatively small living spaces and all the conditions injurious to health that arise therefrom.

(*b.*) The saturation of the soil with the decomposition of certain substances, and a condition of soil which favours such decomposition.

(*c.*) Atmospheric conditions favouring such decomposition, especially sudden transitions of temperature or of humidity from day to day, or between day and night, which also tend to increase individual disposition to disease.

(*d.*) Poverty and want in connexion with their necessary consequences, both general and personal, such as evil habits, bad housing, &c.

(*e.*) Unwholesome drinking water may also favour the spread of the disease.

5. Contact with the sick does not lead in itself to infection, which takes place only when the person concerned is placed in identically similar conditions as the patient himself. The poison does not seem to develop further or to acquire more potency in the human body. Cholera cannot, therefore, be reckoned among the diseases properly contagious.

Pettenkofer, without discussing those conclusions in detail, refers specially to 4*e*, which speaks of the possible influence of impure drinking-water. He says: The drinking-water theory is held by many to be sufficient to enable them to dispense with the *localistic* theory, because the adherents of the former theory maintain that the local and seasonal disposition is to be sought for in the drinking-water, when the drinking-water has been contaminated with cholera dejections; but when cholera epidemics appear then comes the puzzle that only certain localities and not all are attacked. When Pistor says that an unwholesome water may favour the spread of disease, some might hail him as supporter of the drinking-water theory. But no one can be in doubt, who reads p. 224 of his report, that he attributes to bad water no greater influence than he does to bad food, bad air, bad clothing, that is, an influence upon the individual disposition. Just in proportion as the influence of locality was made evident in the inquiries carried on during the epidemic of 1873–74, so in proportion did the influence of drinking-water recede into the background.

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Sympathy for the water theory has not been wanting in Germany, for at the conference at Weimar in 1867 several voices of the highest importance were raised in favour of it, as, for instance (besides John Simon), Griesinger, Hirsch, Delbrück, &c. The Cholera Commission of 1873 paid especial attention (1st Part, page 13) to the inquiry into the influence of drinking-water, and it sounds somewhat discouraging (says Pettenkofer) to find Hirsch (Part V., page 313), after such a lapse of time and so many inquiries, able only to report as follows :—"However little these observations indicate any specific "confirmation of the hypothesis that drinking-water exercises either a direct "or indirect influence on the spread of cholera, still less are we entitled on "account of the negative results, which the inquiry into the drinking-water of "various cholera localities has yielded, notably at Laufen (Part II., p. 81), at "Rebdorf (Part IV., p. 18), at Munich (*ib.*, p. 72), and at Heilbronn (Part V., "p. 99), to consider the question solved in a negative sense, for no inquirer, "not even (if I may use the expression) the most jealous supporter of the "water theory, has insisted that cholera is spread *only* by this means; on all "sides it has been recognised that water is only one of the *media* which are "capable of acting as carriers of the disease poison from individual to indi-"vidual." So much, however, is certain that the epidemic of 1873–74 gave no demonstration of the fact. The supporters of the water-theory have therefore to wait for their justification in the future: I think, however (adds Pettenkofer), I shall not prove a false prophet, when I say that it will ultimately be with them as it was with me, the more jealously I hold to the theory of the influence of drinking-water upon cholera and typhoid, in which I at first believed, the more untenable I found the hypothesis. I, and those who are of the same opinion, have often followed the supporters of the water-theory. When we showed that cholera and typhoid epidemics betrayed no connexion with drinking-water in Munich, they called our attention to other places, as, for example, Roveredo. When we pointed out the same there as in Munich, we were referred to Würzburg and the fortress of Marienberg; when this point also became untenable, to Posen, and so on to other places, and so they might hunt a man over the whole world, always having still another place where they maintained that the influence of drinking-water on cholera and typhoid might be demonstrated. But I am now fixed in my resolve (says Pettenkofer) not to budge from my present position until the adherents of the water theory have furnished the missing proofs. My unbelief, however, does not prevent me from insisting at every opportunity, on general hygienic grounds, that all human habitations should be supplied with abundance of pure water. I find myself here in perfect agreement with Doctors James Cuningham, Douglas Cunningham, and Timothy Lewis, who, after careful and unbiassed inquiry in the very home of cholera, have been unable to support the water-theory.

'If now, on the other hand, we can consider it as settled that the cholera germ can be spread from cholera localities by human intercourse, but that it always depends upon *locality* for epidemic development in other places, then comes the next question so important to the inquiry necessary for the extension of our knowledge, viz., what *is* the nature, or what *may be* the nature, of this local substratum (or *nidus*). The scientific and practical solution of this most important question is only conceivable in connexion with the parasitic theory. The infectious material may be an organised body, a fungus, or the product of the same; for instance, an unorganised ferment or an organic poison, like the poison of putridity, which gives rise to the putrefaction bacteria in meat, in any case it has to do with a process which is conditional on the life of the lowest organisms, and also upon the local conditions of this process. These last have hardly yet been taken into consideration in the fungus investigations hitherto made. Now, however, that facts render it necessary to accept topical and seasonal "helping causes" (that is, topical and seasonal disposition), that line of inquiry only can lead to the desired end, be it experimental, statistical, or pathological, which takes cognisance of those local circumstances and variations, and reckons with them. It is a matter of indifference whether Hirsch's theory, which very nearly coincides with the *diblastic* theory of Nägeli, or mine (Pettenkofer's), which Nägeli has called the *monoblastic* theory, be adopted. I have, for instance, no objection to call a susceptible soil, on which epidemics occur, a sickly or disease-bearing soil; indeed, the expression suits me well enough, but it still remains to be determined what conditions con-

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stitute a disease-bearing soil and one free from disease. If, however, the fission-fungi (schizomycetes) play the principal part, their mere presence cannot be the determining point, for fission-fungi are found in every soil and in every house, not merely in cholera soils and cholera houses; there must therefore be either specific fission-fungi or they must be specially modified. If the cause lie in a certain accommodation of the fission-fungi to their surroundings, to varying nutriment, so to speak, then must those conditions of the soil and house be sought out and clearly demonstrated. As regards the cholera germ we must find out its local substratum or nidus and its nutriment or host, and these we are likely to discover long before the germ itself, just as sugar was recognised in grape-must and in beer-wort as the necessary substratum for alcoholic fermentation, long before the part played by the ferment-fungus was understood.

'I have always (continues Pettenkofer) looked upon the cholera process from a parasitic point of view. I may recall a work of mine on soil and ground-water in their relations to cholera and typhus (Zeitschrift für Biologie, Bd. V.) to which I added a section entitled "Hypothetical," and where I said, "With "regard to the cause of cholera the idea continues to impress itself more and "more strongly that it is something organised, of such delicacy and tenuity "that it has as yet escaped our observation, like the fermentation germs, "which exist in atmospheric air, and which we recognise only by their effects "and in their later stages of development as fermentation cells, if they find "the substratum proper for their further development in."

'The extent to which I accepted, as an example, alcoholic fermentation, the best known parasitic process of that time, may be clearly gathered from the following:—"Let us suppose alcoholic fermentation germs much less generally "spread, having their real home only in India, and also transportable thence "only through human intercourse. Let us further suppose that since the "memory of man grapes had ripened and juice or must been squeezed from "them, and that this juice had been used without hurt or particular effect, no "fermentation having occurred so long as the fermentation-germs from India "were wanting. If now intercourse with India once brought fermentation-"germs directly into such a *must* locality, there would arise among the inha-"bitants epidemics of drunkenness if they could not avoid drinking the "fermented must, just in the same manner as cholera epidemics arise when "we breathe the air over certain localities."

'When I read over again my paper of 1869 I found that little change had taken place in my opinions up to the present time, where we have laid down in the Medical Society (of Munich) the fungus theory as an etiological programme, and I knew at that time just as much as is now accepted as of real moment. Were I to express myself on the present occasion on the etiology of infectious diseases, with special reference to the fungus theory, I might very well use my words of that earlier time. For instance, I said, "The comparison "with wine fermentation enables us to remark what up to this time has "attracted too little attention. Most people are too apt to consider the "disease as simply a consequence of the infection of the cholera germ from "India into the body, whereas the disease is apparently like alcoholic drunken-"ness only the result of a product, perhaps an unorganised product, which in "consequence of the alternate action of germ and topical and seasonal disposi-"tion, is produced in a similar manner to that in which alcohol is produced by "the action of the fermentation germ on the must produced on the spot." I know well enough that it may be otherwise, but I think that mycological and pathological inquiry would do wrong to leave unconsidered the connexion which I have indicated. The stage of incubation in cholera seems generally to be as short as that of putrid poisoning, and in that way does not appear to go against my view in the slightest degree.

'In my former treatise there were several other ideas included, which appear to be important in the light of the parasitic theory of to-day. I said, for instance (page 288):—"Further, we need not raise objections to the possibility "and probability of this analogy, because the process, which usually produces "the matter that causes cholera, may be interrupted by various circumstances, "just as fermentation, in spite of there being a normal amount of sugar in "the must, and in spite of the presence of the ferment, often yields little or "no alcohol. The cholera germ, just like the alcohol germ, must also have a

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" struggle for existence with other germs, out of which it does not always " come off victorious. The sugar also in a solution often turns, instead of " into alcohol and carbonic acid, into lactic and butyric acids, which are quite " incapable of producing intoxication. Even the degree of concentration or " dilution of the normal constituents of the must or the beer-wort has a " powerful influence on the activity and the products of the fermentation. A " concentrated sugar solution is not only a protection against alcoholic " fermentation, even when the ferment is added, but also against other " changes, as, for example, organic putrefaction."

'It may be sufficient to point out that from that time to this I have never found myself in opposition to the parasitic theory; I have striven solely and always against the theory of simple contagion, which in my opinion is erroneous. I have also endeavoured to obtain for local influences their proper position in epidemiological views, and also to hold out goals of the richest promise to experimental fungology, in which I cannot myself take an active part. When I consider the results of the works of the Cholera Commission in the light of the prevailing fungus theory of the present day I might hold it as most probable, seeing that, as I have before said, cholera is no putrefaction poisoning, that intercourse with places, in which the disease is endemic or epidemic, spreads an organism (x) which causes cholera in some way unknown to us at present. This poison, however, when brought into other localities, without losing its poisonous property, can only propagate itself if it finds in that place a substratum (or nidus) (y), which has its origin in the ground and serves so to speak as nutriment or as host, and and which is either already in man himself, or, as seems to be more likely, in the ground, and from thence attaches itself to dwellings situated on the ground, or to objects to be found therein. Again in cases in which outbreaks of cholera appear to arise without the intervention of the soil, as, for example, on board ship, the simultaneous presence of the germ (x) and the substratum (y), arising from the land, must be admitted.

'Lastly, allow me to say a few words further in order to point out in what direction in the meantime our chief indications for practical prophylaxis lie. We may try by various measures to combat x and y. This point was carefully considered by the Commission, and the result of their deliberations is thus given in Part VI., pp. 314–318 :—" Of all the measures which may be " applied to the prevention and combating of cholera, those take the first " place which have for their aim the improvement of general sanitary con- " ditions; all specific measures against cholera will prove unavailing, unless " we pay the strictest attention in inhabited places to the purifying of the soil " from organic and easily putrifying refuse, to the drainage of the soil, to the " constant flushing of the sewers, to the frequent emptying of cesspits, the " complete doing away with pervious cesspits, the careful inspection of " dwellings, and closing those that are really hurtful, the provision of pure " water both for drinking and other domestic purposes, and the like. The " Commission expresses here the united opinion of all the most experienced " physicians when it says that the strictest attention to all the measures " demanded by public general hygiene offers the best protection not only " against cholera, but against all other epidemic diseases; but that those " measures will be successful only on condition that they are followed out " continuously and at all times, for it is a fatal error to imagine that having " recourse to them only at the approach of an epidemic will ward off the " incursions of disease." I grant, says Pettenkofer, that this position of the Commission is far from having in every point of view an exact scientific foundation, but I must further acknowledge that, having regard to the state of our positive knowledge and experience, it is a position that is practically justifiable. Carriages were constructed and did their work, before the laws of motion and friction were known, and men communicated with each other at a distance without electric telegraphs, so in similar manner do we recommend cleanliness, drainage, and copious provision of good water, an elevated situation, and ample aëration, without understanding as yet their proximate connexion with the cholera process, because, during the epidemics of 1873–4, we have had occasion to observe numerous confirmations of their favourable influence, and of the unfavourable influence of their opposites. From the further development of science we may expect in these things similar progress to what has taken place in the means of human intercourse by the intro-

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duction of railways, steamboats, and telegraphs, as soon as a closer knowledge of the laws of motion and electricity allowed of their application to practical problems. Empiricism exhausts and repeats itself. To science alone belong continual progress and the future.'

I have thought it right thus to give a translation of this important paper, both as being the latest utterances of so distinguished an etiologist, and also because there is much in it that will be both interesting and profitable to medical officers of the public services. I do not feel myself in a position to agree entirely with the author, at least in his particular views of the causation of disease, but I am quite at one with him as to the necessity for constant and unremitting attention to every point of hygienic precautions, as being our best chance of contending successfully with cholera and all other preventible diseases. It may also, I think, be admitted that the researches of Pettenkofer and his followers have made out a very strong case for *local* influence as a factor in disease, but the evidence is still wanting to prove that it is the main factor. Here the work of observation might be carried on by medical officers with great advantage, as it is only by repeated and careful observations that we are likely to arrive at a solution of so complicated a problem.

An excellent *resumé* on the subject of "Soil" in its relation to health will be found in the article "Boden" by Dr. Soyka, one of Pettenkofer's assistants at Munich, from the "Real Encyclopædie der Gesammten Heilkunde," published in Vienna. The author entirely upholds Pettenkofer's views, refusing to admit the transmissibility of cholera or typhoid through drinking water, or even that the latter disease is capable of being produced by the inhalation of sewer gas. On these points we may remark that, unless the specific germ be present, neither impure water as such, nor sewer gas as such, will produce the specific disease, but when the germ is present there is every reason to believe they will. And this rests upon a body of evidence in this country which has hardly received the attention it has deserved from continental etiologists of the *localist* school. In particular the examination of drinking water has nowhere been carried out so generally and carefully as in this country. The question is likely to have great light thrown upon it by the action of the National Board of Health in America, which has made extensive arrangements for a general inquiry into this matter. At the same time the *localist* view seems to deserve on the other hand careful attention on the part of English hygienists, who will doubtless find it significant in some instances at least. I might cite the report of Dr. Airy on the outbreak of enteric fever at Pemberton and Orrell in Lancashire during 1880. The district is situated on the clay and shale of the coal measures, through which the coal frequently crops up. The county is undermined with workings. A death from typhoid fever was registered in May, and three cases were under treatment on July 13, 20, 27. Those occurred at Lamberhead Green in the immediate neighbourhood. It was not, however, until the second week of August that the real outbreak took place, during that week four or five cases occurred in successive days, and on the 14th and following days a great rise in the epidemic took place. Fresh families in different directions were found to have the infection, at the rate of four or five a day, and from the 14th to the 20th perhaps as many as 80 persons were attacked. From that date the epidemic began to decline, but there were still scattered cases in the middle of September. The points that attracted attention were, 1st, the wide range of the outbreak, and 2nd, the almost simultaneous occurrence of cases at distances from each other. The natural conclusion was that this pointed to some medium of conveyance common to the whole district. The first idea of the Medical Officer of Health was that the water supply was at fault; but subsequent investigation showed that the supply used was various and in large part rain water not likely to be contaminated; although undoubtedly some had used water from the Pingot well after it had been flooded by the overflow of a foul brook—the Withington brook—polluted with the drainage of villages on its upper course. At the same time the rainfall and flood were very strong, and the spring of the Pingot well is also strong, so that it is doubtful if much impurity would be retained for any time. The water under ordinary circumstances appears to be a fairly pure supply. Altogether Dr. Airy thinks the evidence is not conclusive for connecting the epidemic with the water supply. The same may be said with reference to

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milk, many of the families taking no milk at all, and those who did obtaining it from such various sources as to preclude the possibility of community of influence. The sewerage arrangements are also such as to make it impossible to account for the distribution of cases on the theory of sewer-gas poisoning. This is one of those puzzling negative outbreaks which it is extremely difficult to analyse, at least if we confine ourselves to the consideration of only one set of channels of communication. Viewed, however, from the points of view of local and meteorological conditions there are certainly facts which would seem to favour the "seasonal and topical" views (zeitliche und örtliche Anschauungen) of Pettenkofer. The soil, clay and shale, is not one of those usually considered favourable for development of typhoid, a loose porous soil being more commonly the kind suspected. But in the present instance the ground had been so much cut up and disturbed by the coal workings that the conditions were materially changed, so as to alter the naturally more compact character of the soil to a loose and friable one. The meteorological conditions are notable. From July 1st to 31st there were 24 days on which rain fell, amounting in all to 6·31 inches. Rain also fell on the 1st, 3rd, 5th, and 6th of August, amounting in all to 0·28 inch; but on the 7th of August no less than 1·21 inches fell, an enormous amount for this country, equal to more than 120 tons of water per acre. For the next three weeks (8th to 28th inclusive) not a drop of rain fell; on the 29th only ·02 inch, and none on the 30th and 31st. During the first nine days of September rain fell on the 1st, 5th, and 9th only, amounting to 0·24 inch only; from the 10th to the 17th rain fell on six days, amounting to 1·69 inches. We have thus the following conditions:—1. A wet July, causing undoubtedly a considerable rise in the ground water. 2. An extraordinary rainfall on the 7th August, causing probably a very sudden rise of ground water; then three weeks, rainless, fine and warm, the average excess of daily temperature being 3°·9. During this period the ground water would fall rapidly, having a moist soil exposed to the influence of an unusually high temperature. Just seven days after the phenomenal rainfall above-mentioned, when the ground waterfall would begin to be thoroughly established, the outbreak of fever took place, lasting about 10 days, or till about the time when the lowest point of ground water would probably be reached. The cases subsequently occurring were scattered, the outbreak having ceased to show an epidemic character. There can be no doubt that we have here a series of conditions coinciding in a remarkable degree with the conditions formulated by Pettenkofer as those likely to favour an outbreak of the disease, viz.: 1st. The introduction of the poison, which may or may not be connected with the isolated cases occurring in May and July, for on this point we have no evidence. 2nd. A gradually increasing rise of ground water during July, and a sudden increase on August 7th; this inferred from rainfall. 3rd. A steady fall of ground water beginning soon after that date and lasting till about the end of the month; this also inferred from the rainfall. 4th. A gradual rise again in September; also inferred from the rainfall. According to Pettenkofer the disease is to be found soon after the ground water begins to fall after a sudden rise, and it is likely to continue until the minimum point is reached; when the ground water begins to rise the epidemic is likely to die out. This seems exactly the course followed in the present epidemic, and it certainly indicates that attention ought to be paid to this view of the question.

In the report by Dr. Franklin Parsons on the enteric fever in the Pontardarwe rural sanitary district, a somewhat similar condition of things seems to be indicated, for the severe part of the epidemic at Ystalyfera commenced in the second week in September, just after an exceptionally great rainfall in the latter half of August, the greatest number of cases occurring in the two weeks between the 13th and 27th of September, the disease then declining, and ceasing on the 18th October. This case is, however, not so striking as that of Pemberton and Orrell, because there is here more probable evidence of the drinking of contaminated water among the persons affected in Ystalyfera. Again, the contaminated water was discontinued on the 26th September, after which the disease rapidly declined, until it ceased on the 18th of October. It would certainly be desirable, where it is possible, that meteorological data should be supplied in reports on similar outbreaks. It would also greatly enhance the value of such inquiries if observations on ground water level could

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be established generally throughout the country. If the level were recorded once a week at chief points throughout the country, much useful information would be obtained, and the work might be gradually extended in course of time by private effort, if it were found difficult or impracticable to carry it out as a public measure.

Another point of importance, which has been the outcome of recent investigations, is the growing favour into which the *germ* (or, as it sometimes called, the *parasitic*) theory of disease is rising. Disease causation is very generally referred now to the influence of low forms of organised life, acting either mediately or immediately upon the system. The exact bearing of the question is as yet undetermined, and in all probability the *modus operandi* is different in different classes of disease, but the part played by these lower organisms is evidently of the highest importance. The discovery of the *Bacillus anthracis* in malignant pustule, of *spirillum* in the blood in certain forms of fever, of the *Bacillus malariæ* by Klebs and Tommasi-Crudelli in paroxysmal fever, the discoveries of Pasteur with reference to fowl cholera, and lastly, the remarkable outbreak of disease, accompanied with the presence of *Bacilli* in the blood in the Welbeck poisoning case, all tend in this interesting direction. This last case took place in June 1880, at a sale on the Duke of Portland's estate at Welbeck. All, or nearly all, who partook of certain hams in the refreshment rooms were seized with violent and in some cases fatal diarrhœa. In one of the fatal cases bacilli in large numbers were found in the blood vessels, of the kidney particularly ; similar bacilli existed in the hams, and rabbits and other animals fed on them were found to have bacilli in considerable quantities in their bodies after death. It is, of course, unlikely that we shall be able in all diseases to lay bare the apparent cause to such plain demonstration as this, but the information already acquired points in a direction which pathologists and etiologists must follow, either to confirm and extend the observations already made, or to clear them out of the way should they prove to be fallacies.

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APPENDIX No. II.

LIST OF OPERATIONS PERFORMED AT THE ROYAL VICTORIA HOSPITAL, NETLEY, DURING THE YEAR 1880, WITH SHORT ABSTRACTS OF SOME OF THE MORE IMPORTANT CASES.

By Surgeon-Major R. F. Tobin, A.M.D., Assistant Professor of Military Surgery.

Operations.	Number of Cases.	Diseases.	Results.				Remarks.
			Successful.	Otherwise.	In Hospital.	Died.	
Amputations.							
Lower third of right thigh	1	Sarcoma of tibia -	1	—	—	—	See Case No. 1.
Second phalanx, forefinger	1	Necrosis - -	1	—	—	—	
Metacarpo-phalangeal joint	4	Anchylosis and necrosis.	4	—	—	—	
Metatarsel bone, great toe		Necrosis - -	1	—	—	—	
Excisions of Joints.							
Shoulder joint -	2	Disease of head of humerus.	2	—	—	—	See Cases 2 and 3.
Urinary Organs.							
Median lithotomy . -	1	Vesical calculus -	1	—	—	—	See Case No.
Perineal section - -	1	Calculus impacted in perineum.	1	—	—	—	
„ „ (without staff).	1	Stricture of urethra -	1	—	—	—	See Case
Plastic operation - -	1	Urinary fistula -	—	1	—	—	
Internal urethrotomy -	10	Stricture of urethra -	10	—	—	—	
Genital Organs.							
Tapping and injecting with iodine.	5	Hydrocele - -	4	1	—	—	
Intestines.							
Herniotomy - -	1	Hernia inquinal, strangulated.	—	—	—	1	See Case No. 6.
Division of sphincter -	6	Fistula in ano -	6	—	—	—	
Ligature - - -	1	Hæmorrhoids -	1	—	—	—	
Respiratory Organs.							
Paracentesis of thorax -	2	Empyema - - -	2	—	—	—	Cases in the Medical Division.
Tumours.							
Removal of - - -	1	Tumour of face -	1	—	—	—	
Trephining of skull -	1	Epilepsy - -	1	—	—	—	See Case No. 7.
Extraction of bullet -	2	Gun-shot wound -	2	—	—	—	See Cases Nos. 7 and 8.
Removal of Necrosed bone	3	Disease of bone -	3	—	—	—	

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Case No. 3.—Excision of Right Shoulder Joint.

No. 259, Private J. W., 94th Regiment, age 22 years, a fine healthy young soldier, was shot through the right shoulder at the storming of Sekukini town on 28th November 1879. The bullet, description unknown, entered in front just below the coracoid process and escaped at the posterior fold of the axilla. At the field hospital, to which he was taken, it was proposed to excise the head of the humerus but the patient would not consent to the operation being performed. On the 15th May 1880 he arrived at Netley. He was in excellent health, the wound of exit had closed, but through that of entrance a sinus opened which led down to dead bone within the capsule of the joint. The movements of the arm when the scapula was fixed were very limited. He now asked that whatever was considered best for him should be done.

Accordingly on 3rd June 1880 the injured head of the humerus was removed by a straight incision through the deltoid. The bone was divided about one inch below the anatomical neck, the highest uninjured point.

He made a good and rapid recovery and was discharged from hospital on 3rd September 1880 with a most useful arm.

Case No. 7.—Trephining of Skull.

C. M., age 37. On the 10th September 1879 while quartered at Gibraltar attempted, after a bout of drinking, to commit suicide by shooting himself in the head with a revolver of the ordinary service pattern. He immediately became unconscious and in this condition was removed to hospital. On admission he was conscious, his pulse was slow and respiration normal. He complained of great pain behind right ear. A wound was seen two inches above the outer part of right eyebrow from which arterial blood was oozing. On probing the wound the skull was found perforated, the probe sinking to the extent of half its length in a direction downwards and inwards. The entrance of the wound was then enlarged by an incision through the soft parts, sufficiently to admit the little finger which could feel the brain pulsating underneath the apparently uninjured dura-mater. No bullet was detected, the wound was ordered to be kept open.

10th to 21st Sept. The pain continued behind left ear (till a late period in the history of the case this was a persistent symptom). No marked change in his condition.

21st Sept., evening. He complained of pain in forehead and had a shivering fit like ague. The discharge from the wound became watery, great gastric irritation and bilious vomiting.

28th Sept. He became much worse and the following symptoms rapidly developed, very weak pulse, unconsciousness till roused, insomnia, picking of the bed-clothes, complete left hemiplegia (coming on gradually, without loss of sensation, but attended with elevation of temperature of the paralyzed arm and leg), impaired deglutition and retention of urine. The discharge from the wound increased and became purulent and bloody. Enemata of beef tea and the catheter were used.

29th Sept. to 7th Oct. The above symptoms diminished in intensity, the left side regained power, the wound began to contract.

7th Oct. 1879 *to* 11*th Feb.* 1880. A gradual improvement continued to take place in his condition; during the whole of this time the wound was kept open and discharge continued to come from it.

11*th Feb.* He was invalided home to England.

On arrival at Netley 1st March 1880 his condition was as follows: a pale emaciated man of middle age, reserved and desponding in manner, complaining of a constant pulsating pain behind the right mastoid process, where also is some tenderness on pressure, and of sleeplessness, and giddiness on exertion. His right ear is somewhat deaf and the vision of right eye is slightly impaired, and the right pupil is contracted. There is a sinus on the right frontal eminence about the diameter of an ordinary quill, its edges are inverted and adherent to the bone, it admits a probe freely to the depth of ¾ inch. A greyish discharge escapes continually from it, the discharge lying in the sinus

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has pulsation communicated to it from below. His temperature is normal. pulse 80, full and compressible.

From arrival till 7th April his general condition remained unchanged, Several small pieces of bone, some marked with lead, were extracted with a forceps from the bottom of the sinus which was enlarged by the insertion of drainage tubes. In this and other cases the insertion of a full sized drainage tube, slit open and then rolled into a small compass, was found a most effectual way of enlarging sinuses and much superior to the "sea-weed tent" which always caused great irritation.

8th April. A dark substance which the electric probe indicated to be metal was seen at the bottom of the sinus and partially underneath the inner table of the skull. The patient was put under ether, the wound was enlarged by reflecting the neighbouring soft parts. Some loose pieces of bone were picked away and the bullet was seized by a forceps and drawn forwards, but it could not be extracted till it had been turned with its smallest axis towards the wound, all projecting portions picked off, and the forceps buried in the soft lead so as not to project at any point. The bullet on removal was found a good deal altered in shape; weight 130 grains. The whole operation was performed under Lister's Antiseptic precautions and a dressing of carbolic gauze was applied.

The history of the case during the next few months is that of the closing in of the wound and the gradual protrusion of a small hernia cerebri, the patient's health and spirits improving at the same time.

At the beginning of July his condition is thus described in the case-book. "Is in fair bodily health but silent and occasionally depressed, suffers from a "singing noise in his head, his sleep is disturbed by dreams, deafness in right "ear and dimness of vision in right eye continue. The pupil of this eye is "somewhat contracted, the ophthalmoscope shows some congestion of the "choroidal vessels. The tympanum of the right ear is normal in appearance "and the Eustachian tube not blocked. The site of the wound is marked by "a depression one inch in diameter in which lies a soft reddish-brown mass, "with a pulsation not dependent on that of the surrounding tissues, and "connected with the parts within the skull by a slender pedicle which passes "through an opening in the centre of the above-named depression."

7th July. "A probe was passed alongside the pedicle of the fungoid mass to "the depth of ¾ inch. No dead bone was detected but the tumour puffed up "to the size of a marble, and giddiness, nausea, and head-ache were produced. "The symptoms subsided on the following day and the tumour returned to "its former size."

1st August. "A graduated compress has been applied to the wound for the "last week with the effect of causing the small hernia almost completely to "disappear, but it had to be discontinued yesterday owing to the patient "complaining of head-ache and giddines when it was applied. To-day the "symptoms have disappeared and the tumour has returned to its original "size."

From this date till 6th December there was little or no change in the patient's condition. He suffered at times from slight febrile exacerbations which seemed to delay his convalescence.

On the evening of 6th December he complained of sore throat and a feeling of stiffness and fullness in the nose for which there were no physical signs to account. During the night he had several fits.

7th Dec. His temperature was 100·1 F., pulse 76 and full. Skin hot and perspiring. His right pupil was contracted and his manner rather wild, he answered questions with much difficulty when spoken to. As the day went on he became very drowsy and had three more fits, they were of an epileptic character and each lasted about five minutes.

During the night. He was very restless, and had four fits up to 3 a.m., when he began to have them at intervals of half an hour.

8th Dec. 10 *a.m.* He was in the "Status Epilepticus," he was unconscious, foaming at the mouth, breathing very shallow, his temperature was 98 F., pulse 104 and thready in character, his body bathed in sweat of a strong odour, his head was persistently turned from the injured side, his pupils dilated and at intervals never longer than fifteen minutes he had a paroxysm of the

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following character. Pulse becomes very weak, both eyes open and the pupils contract, the left hand makes several to and fro movements, immediately followed by similar action on the part of the right hand, the whole body then becomes convulsed, the eyes turn upwards and to the right, and the muscles then relax. After each fit respiration became suspended, usually for half a minute and on one occasion for 1½ minutes, necessitating artificial respiration. This condition lasted till 1 p.m., when, death seeming imminent after each fit, it was decided to examine the condition of the brain and membranes in the neighbourhood of the wound, and as the opening in the skull made by the bullet was too small to permit of this being done the operation of trephining was performed.

The patient being completely insensible no anæsthetic was used. The wound was enlarged upwards and laterally by a crucial incision and a small trephine was applied so that the lower border of its circumference corresponded to the upper limit of the aperture made by the bullet. When the circle of bone was removed the pedicle of the hernia cerebri was seen to be tightly embraced by a ring of dura mater, which was thickened but otherwise normal in appearance. The dura mater was then opened up on a director, and on doing this a piece of bone about the size of a grain of wheat, rough and of an oval shape, was found bound to the stalk of the hernia by the thickened ring of dura mater. As it was considered that this could scarcely have occasioned the symptoms already described and as the presence of pus was suspected a grooved needle was passed into the substance of the brain to a depth of about 2 inches in two different directions but no pus was found. The hernia cerebri was then shaved off, the edges of the incision in the dura mater brought gently together, the wound left open and an antiseptic gauze dressing applied. Immediately after the operation the character of the fits changed. They recurred every 20 minutes till 4 p.m., but were much milder and no suspension of respiration succeeded them.

At 4 *p.m.* His temperature was 102·2, pulse 120 (compressible), respirations 32, skin hot and perspiring.

At 4.45 *p.m.* The nurse in attendance noticed that a great change for the better had occurred in the aspect of the patient and that he had become conscious (mentioning the nurse's name when asked by her if he recognised who she was), also that the dressing had become saturated by a thin discharge of a brown colour which had come away in sufficient quantity to wet the pillow case considerably. His pulse fell to 72 and was much stronger, respirations to 28, and temperature to 101° F. He appeared to have power over all his muscles.

During the night. He was very restless and was twice given gr. 20 of Bromide of Potassium. He slept from 5 to 6, after this had two fits.

During the next six days his condition continued very critical; his symptoms being those of weakness and great nervous depression complicated by a recurrence of fits at irregular intervals. The wound, however, remained healthy and the brain and its membranes appeared in no way to resent the operative interference to which they had been subjected.

16*th Dec.* There was a marked improvement and from this date his convalescence was rapid and uninterrupted.

2*nd January* 1881. Wound had completely healed without a recurrence of the hernia cerebri leaving only a slight cicatrix and depression. General condition excellent.

16*th June.* Still detained in hospital for military reasons connected with his discharge from the service. He continues in good health, but suffers at times from slight head-aches, and if he bends down feels giddy and in rising involuntarily places his hand to his head. Hearing on the right side is not altogether as acute as on the left. Other senses normal.

Remarks. The bullet notwithstanding the short distance at which the pistol was discharged appears to have lodged between the dura mater and cranium, and the hernia cerebri which protruded after the removal of the bullet was no doubt due to a spicula of bone piercing the dura mater and injuring the brain.

It is also of importance and interest to consider whether the small rough piece of bone which was found tightly bound to the hernia cerebri could have induced the very severe symptoms which rendered necessary the operation of trephining. When met with during the performance of the operation it

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appeared to me as stated in the history of the case an insufficient cause, but when I recollected that even slight interference with the hernia cerebri had caused very severe symptoms, that the passing of a probe alongside the pedicle had "caused the tumour to puff up to the size of a marble and produced giddi-"ness, nausea, and headache," and that on account of similar symptoms the pressure of a soft pad had to be discontinued, and moreover when in the neighbourhood of the wound nothing else was found that could occasion pressure or irritation, and when the removal of the bit of bone in question was followed by such satisfactory results, I was obliged to reconsider my opinion and to come to a different conclusion. After all the position and shape of a foreign body and the condition of the parts in its neighbourhood, rather than its size, seem to influence the amount of irritation it will create. A bullet, it is known, may lie harmlessly for years in the substance of a muscle, while a thorn under the nail may set up a fatal cellulitis.

Case No. 8.—Extraction of Bullet.

No. 1,097, Private J. B., 2/8th Regiment, age 23, service 3 years, was wounded at Peiwar Kotal on 2nd December 1878. He was sitting with legs crossed, his rifle resting on his thighs when he was struck by a bullet fired probably at 800 yards. He had emptied his bladder and bowels about an hour previously. When struck he experienced a shock and a feeling of numbness in the lower part of abdomen but no pain, he bled profusely, got up and limped with help of his rifle for a few yards to the rear and then fell down from weakness. He was at once picked up and sent to the field hospital in a dhooly. The wound was dressed with wet lint; the bleeding stopped of its own accord. The wound immediately after receipt, according to patient's description, appeared as a straight cut about an inch in length running directly across the abdomen half an inch above the symphysis pubis. From the appearance of the wound he formed the opinion that he had been struck by a splinter. The same projectile carried away a button and a few square inches of his trowsers, and what became of these he cannot say, neither can he give any description of the urine and fœces passed after the injury.

From the receipt of injury, 2nd December 1878, till arrival at Netley 20th February 1880 there is little or no history of his case. He states that during this time the wound never closed and that he suffered chiefly from pain in neighbourhood of wound, increased by movement, and from frequent micturition (every quarter of an hour at times), pain extending down the urethra at conclusion of act.

At present, 3rd April 1880, the patient appears well nourished and in good health. Half an inch above the symphysis pubis there is a raised red circular patch of cicatricial tissue, three quarters of an inch in diameter, in the centre of which opens an orifice the size of a crow's quill. A probe passed into this takes a direction backwards and outwards till it gets to the outer edge of the right rectus muscle, and then directly backwards to a depth of 2½ inches, where it strikes a foreign body. This, Nelaton's probe proves to be of lead, but the electric probe is unaffected by it. It is apparently lying between the bladder and the descending ramus of pubes. It cannot be felt either by the finger in the rectum or a sound in the bladder. At first by dilatation of the sinus with a sea-weed tent, and by making the patient lie as much as possible on his face, an attempt was made to bring the bullet nearer the surface, but the former set up so much inflammation both local and general that it had to be discontinued and the bullet appeared too tightly impacted to be affected by the position of the patient. It was therefore decided to cut down upon it. This was done by laying open the sinus already referred to downwards to the pubes and by dividing some outer fibres of the rectus muscle. The finger passed into this enlarged opening could just feel the base of the bullet projecting from underneath some thickened tissue, probably one of the true ligaments of the bladder, which when divided by a blunt pointed vistoury left the bullet free for extraction by a long narrow forceps. It proved to be an old pattern Enfield bullet, its base stopped with clay which accounted for its not affecting the electric probe since the fine points thereof stuck in the clay (as indicated by marks thereon), and did not reach the lead as did the rounded porcelain probe. After the operation the wound healed rapidly and the frequency of micturition became

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nearly normal, and moreover an oblique inguinal hernia which used to come down when he was admitted into hospital was cured by the cicatricial contraction consequent on the healing of the wound.

Stricture of the Urethra.

Thirty-two cases of stricture of the urethra were treated during the year most of which were severe and complicated cases invalided for that disease. As a rule gradual dilatation was the plan of treatment adopted, but strictures situated in the penile portion of the urethra and any that could not be dilated with ease were divided by internal urethrotomy with most satisfactory results. Before being discharged from hospital each patient was taught to pass an instrument for himself and was provided with a suitable metal sound.

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APPENDIX No. III.

SPECIAL REPORT ON THE HOSPITAL ORGANISATION, SANITATION, AND MEDICAL HISTORY OF THE WARS IN AFGHANISTAN, 1878-79-80.

By Surgeon-General T. CRAWFORD, M.D., Principal Medical Officer, Her Majesty's Forces in Bengal.

1. On the 23rd September 1878, when it became known that a force consisting of three columns was to be organised for service in Afghanistan, a memorandum showing the principles on which the medical service was to be conducted was submitted to the Adjutant-General for the approval of His Excellency the Commander-in-Chief and sanction of Government.

2. The object in view was twofold—first, to relieve the army of all unnecessary *impedimenta* in the form of sick, carriage, establishment and stores; and second, to distribute the medical element so as best to meet all the contingencies likely to arise on field service.

3. *Hospitals.*—To carry out the first of these objects it was recommended to treat the sick and wounded in divisional hospitals (field and base); the former of a mobile character and equipped for 5 per cent. of sick, and the latter stationary and equipped for 7 per cent. of sick (total 12 per cent.); the exact position to be taken up by both field and base hospitals to be determined by the general officer in command.

4. It was also contemplated in the event of its being impracticable to evacuate the sick from front to base, as, for instance, would necessarily be the case during the hot season in this climate, that the field hospitals should be equipped for 10 per cent. instead of five, and the base hospital, which would still have its equipment and establishment for 2 per cent., converted into a reserve depôt to meet emergencies.

5. Each field hospital was to be divided into sections, corresponding with the several brigades, and so equipped as to admit of its accompanying the brigade to which it was attached. These sections were again to be subdivided into sub-sections, for the purpose of affording aid to small parties of troops operating from the head-quarters; and a certain proportion of selected stores, appliances and medical comforts were kept conveniently packed ready for use with small bodies of troops on emergent service.

6. *Medical aid with Corps.*—In addition to the arrangements detailed for field and base hospitals, a medical officer, with a very limited establishment and small supply of medical and surgical stores, was to be attached to each corps-unit, for the purpose of treating such ailments as were likely to recover in a day or two, and for affording immediate aid to the wounded.

7. *Depôts of Medical Stores.*—A small depôt of medical stores was to be attached to each field hospital for meeting the requirements of medical officers with corps, in order to obviate the expense and inconvenience of establishing a general field depôt of medical stores.

8. *Rest Depôts.*—The pivot and design of the whole system was that a disabled soldier, unless the cause of his disability were of a trifling and speedily remediable nature, should always be moved in the direction in which he must eventually go if incapacitated for the campaign by sickness or wounds, viz., to the rear. To admit of the regular and systematic evacuation of sick and wounded from front to base, it was intended to form rest depôts *en route*, at which the sick could be sheltered, fed and attended, transport animals watered, and the doolie-bearers rested. Where rest depôts could not be established, the protection of military convoys was to be utilised for the sick and wounded.

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9. *Sick Carriage.*—The whole of the sick transport, of whatever description, was to be placed under the orders of the principal medical officer, with a view to his distributing it as, and where, required. A limited quantity of such carriage, however, was always to be attached to corps for the purpose of taking the sick to the field hospital.

10. *Précis of Field Medical Arrangements.*—Anticipating that the recommendations made by this Department would have received the sanction of Government after the approval of His Excellency the Commander-in-Chief had been accorded to them, a pamphlet—"Précis of field service medical arrangements"—based on the above principles was compiled, printed, and was ready for issue on the 15th October following.

11. After much correspondence the sanction of Government was ultimately obtained on the 8th November to the proposals put forward by this Department on the previous 23rd September, but it was only on the 21st February following that the "Précis of field service medical arrangements" was authoritatively published (*vide* G. G. O. No. 165 of 1879).

12. The troops had taken the field and the first action of the campaign—that at Ali Musjid—was fought on November 22nd, 1878.

13. *Light Equipment.*—Difficulties at first arose in consequence of the cantonment equipment being unsuitable for the service on which the troops were proceeding. There was no light equipment capable of being carried by mules or ponies, but this was shortly met partly by local manufacture and partly by requisitions on England.

14. A Committee, which had been ordered to be convened shortly before the war, but could not assemble until after the close of the operations in 1879, have carefully considered the medical requirements of troops on service; and as the recommendations of the Committee have received the approval of Government, no such difficulty need be felt in future campaigns.

15. *General and Regimental Hospital System.*—The expedition into Afghanistan having been the first occasion on which the general hospital system was adopted and followed in the field, some remarks seem necessary in regard to it, and to the regimental hospital system which—as far as the British troops were concerned—it superseded. The medical requirements of the Indian military service are peculiar, and in some few stations there may be no alternative but to perpetuate a modified regimental hospital; but in a campaign the regimental hospital, with its own staff, transport, and stores, is but an incumbrance, when it has to be repeated in its every detail as many times as there are separate regiments and other marching units, and when it has moreover to be supplemented, as it must on field service, by some general or field hospital provision.

16. The *desiderata* of a medical and hospital establishment accompanying a force on active service are manifestly that it shall be efficient, that it shall dispense with needless re-duplication of stores and appliances, and that its transport shall be reduced to the lowest mark consistent with efficiency. In these respects the regimental system cannot compare with a consolidated one.

17. The leading advantages of a consolidated system consist mainly in a defined purpose and method in the arrangement of details. Its objects are to equip corps and hospitals with a limited but adequate supply of selected materials duly arranged; to appropriate medical officers and subordinates to positions where they will certainly be most needed in actual warfare, viz., to sick, medical duties, and hospitals, instead of to healthy men of regiments and batteries, and not to waste skilled medical labour, or to encumber a moving column with unnecessary *impedimenta*, whether these consist of stores or sick; and it must be remembered that, while the disposal of wounded men becomes only occasionally needful, the sick of a column are a constant *quantity* for which provision has to be made.

18. A clear appreciation of the medical requirements of field service and a right judgment as to the best method of fulfilling them are matters of vital importance in warfare. The evils of a defective medical system cannot be confined within the limits of that branch of the service only, but are reflected on the army system as a whole; for the freedom of movement of an army will be obviously in direct proportion to the degree to which it is freed from stores, transport, sick and wounded, and the power of those in command of it will be increased in proportion as strategical objects, untrammelled by such conside-

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rations, occupy the first and only place. But it is when we inquire what is the direct and immediate injury produced by a defective medical system on those disabled by wounds or sickness that we perceive how everything depends upon a clear, simple, and effective administration. In comparison with this the individual efforts of any number of the ablest surgeons count for very little. If sickness in an army is to be prevented, if the wounded are to be promptly succoured and saved from evils and complications which are not very remote sequences of wounds, if the diseases engendered by the overcrowding of wounded men are to be avoided, and if the skill of the most skilful surgeon or physician is to avail, will all depend upon his patients being brought to him in a condition to profit by his skill and by their being lodged, fed, and subsequently transported from him in such a way as not to counteract what has been done. All this depends upon administration and organisation, that is, the proper distribution of men, animals, and material. In a large civil hospital everything, as far as the individual patient is concerned, may depend upon the amount of penetration and skill evinced in diagnosis and treatment; but in war it is far otherwise, for the efforts of one man, however energetic and skilful, are almost infinitesimal, limited as they must be in application to one or a series of individual units in succession, who may never, but for the most careful and vigilant administration, come under his care at all, or not until some complication or constitutional infection has arisen which is to be the beginning of the end. If the system which deals with and provides for the safety of the aggregate of sick and wounded be not based upon sound and practical principles, success in these directions cannot be attained; and it follows therefore that the better the doctor the more imperative is the position those considerations assume to him.

19. *The Economy of a General System.*—The superior economy of a consolidated field hospital over that of a regimental hospital system is shown in the following table, based on the Kuram Valley Column:—

STATEMENT showing the ESTABLISHMENT REQUIRED for the EUROPEAN FORCE of the KURAM VALLEY COLUMN on the "REGIMENTAL" and "DIVISIONAL" HOSPITAL SYSTEMS.

	Regimental System.							Divisional System.							
	With Corps.		With Fixed Field Hospitals.		With Kohat Base Hospital.		Grand Total.	With Corps.		With Field Hospitals.		With Base Hospitals.		Grand Total.	Decrease.
	Hospital.	Purveyors.	Hospital.	Purveyors.	Hospital.	Purveyors.		Hospital.	Purveyors.	Hospital.	Purveyors.	Hospital.	Purveyors.		
F/A Royal Horse Artillery.	14	6						4	—						
G/3rd Royal Artillery.	14	6						4	—						
C/4th Royal Artillery.	14	6						4	—						
I/8th Royal Artillery.	7	6						2	—						
Squadron 9th Lancers.	14	6	50	14	100	24	525	4	—	85	12	128	38	297	Decrease, 228 servants on divisional hospital system.
2/8th Foot -	49	12						4	—						
67th „ -	49	12						4	—						
72nd „ -	49	12						4	—						
92nd „ -	49	12						4	—						
Total -	259	78	50	14	100	24	525	34	—	85	12	128	38	297	

20. *Difficulties encountered.*—Campaigns in India differ in some important respects from those of Europe. The composite character of the divisions and the fact that in exceptional instances only are they combined for offensive

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warfare have contributed to the maintenance of a system believed to be best adapted to small units.

21. When the "Précis of field medical service" was drawn up, there was neither time to shape it in every particular to manifold necessities, nor did the requisite organisation or material exist for securing the adequate fulfilment of the design in view. The existing material and organisation had to be adapted perforce to the work already in hand. Under circumstances so adverse, it becomes a matter of surprise that its working proved as efficient and satisfactory as, from the reports of medical officers, seems to have been the case.

22. During the late campaign one medical head, selected indiscriminately from either service, was appointed to each division in the field.

23. Nevertheless, frequent references were necessary to the respective heads of the British and Indian medical services,—sometimes to one and sometimes to the other authority—occasioning the delays and inconveniences of a divided authority which might, at any time, through divergence of opinion, have become dangerously obstructive.

24. It was due to this anomaly that two systems—regimental for Native troops, and general for Europeans—obtained.

25. The arrangements for the transport of the sick, both in *personnel* and *materiel*, were at the beginning of the war and during the first campaign very inefficient in some of the columns. The kahars and doolie-bearers were for the most part physically unfit for the work, to which many of them were wholly new; clothing was very tardily issued to them; and instead of a body of carefully selected men fitted for arduous work, the majority of them had never been properly inspected. Such is the general tenor of all the reports received from medical officers.

26. Moreover, there was no properly organised staff of non-commissioned officers or men to relieve the medical officers of the physical labour and worry entailed upon them by mustering the kahars and personally superintending their duties.

27. The transport animals, camels and mules appropriated for hospital use were often unfit for the work, which required the strongest animals; the hospital equipment (conveyed in camel trunks) was too heavy and unsuitable for campaigning in a difficult country. The sick transport of a division, instead of being maintained apart, was frequently diverted to other uses; the sick carriage, both in the Quetta and Khyber columns, was otherwise appropriated, and hospital tents and equipage, in the instance of Kandahar, were returned to the divisional field hospitals in an unserviceable state.

28. *Description of Sick Carriage.*—The sick carriage comprised—

(*a.*) Doolies of several pattern.
(*b.*) Dandies „ „
(*c.*) Camel kajawahs.
(*d.*) Ponies.

29. Of the doolies, the "Bourke," "Hamilton," "Mudget," "Bengal Army," and "Bombay Army" patterns have been used, and from reports the "Hamilton" doolie appears to have been generally approved. It, as well as the "Mudget" doolie (which it resembles), are made on the principle of the ordinary "Bengal Army" doolie, with the advantage of being more portable and of forming a stretcher if required. The "Bourke" doolie, in consequence of the amount of iron used in its construction, cannot be easily repaired on service; and unless the iron used is of the best description, and a reserve of the several component parts are carried, the doolie will prove of little use.

30. The "Bombay Army" doolie is not portable, while that ordinarily met with in Bengal is quite good enough for service, but would be improved by its ends being so made as to admit of its being easily packed for conveyance by train.

31. All these doolies are more or less suitable for service in the plains or where there are roads; but none of them are fully adapted to the requirements of hill warfare, involving steep ascents and descents, often along rugged paths with projecting boulders.

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32. Of the several descriptions of dandies, the "Lushai" pattern is the best; the other patterns (Bareilly and common) have been condemned as unsuitable for the conveyance of the wounded.

33. WRIGHT OF DANDIES AND DOOLIES.

Dandies.

	lbs.
Belmont	27
Bareilly	34
Common	43 and 44½
Lushai	52

Doolies.

	Maund*	lbs.
Common	1	14
Hamilton	1	8
Mudget	1	15

34. The "camel kajawah" has been used, and appears to be suited for the conveyance of cases of slight illness only. Two or three different patterns of kajawahs have been tried; but unless they are well made and form a comfortable seat for the patient, and are provided with a covering to keep off the sun and rain, they would prove to be useless on service, except for native soldiers or slight cases of illness.

35. Reports in connexion with doolies, dandies, and kajawahs have been furnished to the Quartermaster-General and Commissary-General.

36. *Tentage.—Lascar pâls* were used for the sick and guards. Dimensions 16 × 16 feet, accommodating 8 sick; weight, 3½ maunds.

Sepoy's pâls, double, were used for troops. Dimensions, 32 × 16 feet, accommodating 22 men or 50 followers; weight, 6¼ maunds.

Pâls; double fly were used for mountain batteries. Dimensions, 12 × 8 feet, accommodating 8 men; weight, 1¼ maunds.

European Private's tents were occasionally used, especially during the hot months. Dimensions, 20 × 16 feet, accommodating 8 to 12 sick, or 16 men; weight, 10 maunds.

37. The European private's tents, the sepoy pâl, lascar pâl, the European hill tent, and a "Routie" or experimental tent were all with the force for European or Native troops and followers, the last named having been largely used for the followers.

38. The tentage, although good and well adapted to warfare in the plains, did not meet all the requirements of warfare beyond the frontier as regards portability, facility of pitching and striking, and adequate protection from cold and wet.

39. The European private's tent is a good one as regards comfort and shelter, and well suited for depôts, standing camps and hospitals, but insufficiently portable.

40. The sepoy pâl was used almost exclusively for natives; the hill tent is very cold in winter and hot in summer; the lascar pâl is a very useful tent, portable, and readily pitched, but cold in winter and hot in summer.

41. Officers supplied themselves with tents of various patterns. So long as they kept within the regulated allowance of baggage (80 lbs.), conformity in other respects was not required.

42. *Bedding and Clothing.*—The following special scale of clothing and bedding was sanctioned:—

BRITISH TROOPS.

Waterproof sheet	1
Jersey	1
Warm socks, pairs	2
Mittens	1
Poshteen,† or wadded coat, or other suitable warm garment	1

* Maund = 82 lbs.

† A sheep skin overcoat, worn with the fur inside.

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Boots, pair (on payment)	1
Caps, Balaclava	1
Extra blanket	1

43. In addition to the above each soldier was recommended to take from his kit—

Cholera belt	1
Flannel shirts	2
Forage cap	1
Warm trousers	1
Warm serge coat, lined with flannel	1
Warm socks, pairs	2
Great coat	1
Comforter	1
Blankets	2
Helmet	1
Boots, pairs	2

44. For night guards, sentries were furnished with long poshteens in substitution of the poshteen sanctioned above.

45. Native followers were allowed the following articles:—

Blanket, country	1
Puttees, pair	1
Poshteen, or other suitable warm garment	1
Warm pyjamahs, pair	1
Shoes, pair	1
Waterproof sheet	1

46. The above liberal scale of warm clothing and bedding was absolutely necessary in consequence of the severity of the winter across the frontier. During the summer months khaki-dyed drill would appear to be the most suitable material for the outer garments of the troops. The coat, however, should be of a loose description, something of a "Norfolk blouse" pattern.

47. *Weight carried by a Soldier.*—The weight carried by the European infantry soldier may be taken as about 36 lbs., *e.g.*:—

Rifle	9 lbs.
70 rounds of ammunition	8¾ ,,
Water bottle (filled 14½ ozs.)	2½ ,,
Mess tin	1½ ,,
Great coat	3¾ ,,
Havresack with fork and knife	¾ lb.
Bayonet and scabbard	1½ lbs.
Belts and ammunition pouch	4 ,,
One pair socks, one towel	1¾ ,,
Cape of great coat	1¼ ,,
	34¾ lbs.

48. Weight of soldier's kit when coming to hospital - 76 lbs.

49. *Rations.*—The authorised daily ration for European troops was as follows:—

Fresh meat, exclusive of bone	1 lb.
Bread	1¼ lbs.
or	
Biscuit	1 lb.
Rice or flour	4 ozs.
Sugar	3 ,,
Tea	¾ oz.
Salt	⅔ ,,
Potatoes	10 ozs.
Green vegetables (when procurable)	6 ,,

If green vegetables were not procurable, 1 oz. of dhall was issued, and the potato ration increased to 12 ozs.

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50. Coffee was not recommended, owing to the difficulty of preparing it on service.

51. The increase of ¼ lb. of bread and meat was considered essential in consequence of the increased work imposed on the troops on service, and the inferior or uncertain quality of meat obtainable across the frontier.

52. As regards native followers, the daily ration consisted of—

Atta or rice	-	1 seer.
Dhall	-	2 chittacks.
Ghee	-	½ chittack.
Salt	-	½ „

53. *Rum.*—Rum at the rate of one dram per man per diem was authorised, half of which to be issued at dinner, and the remainder in the evening after sunset. An extra ration of rum could be issued, under the authority of the local commander, in cases of unusual exposure or unwonted exertion and fatigue.

54. *Preserved Provisions.*—The following special provisions were authorised to meet the requirements of exceptional circumstances:—

(*a.*) *Salt pork* in lieu of the fresh meat ration. The pork was not liked by the men, and its issue was subsequently discontinued.

(*b.*) *Australian meat* in lieu of the fresh meat ration. This was appreciated, but should only be issued when fresh meat is not procurable.

(*c.*) *Pickles* or *vinegar* were used daily with the ration of salt pork. Pickles should be supplied to troops once or twice a week, irrespective of whether fresh or preserved meat be supplied to them.

(*d.*) *Preserved potatoes* or *Compressed vegetables* were issued where fresh vegetables could not be obtained. Both the articles are of considerable value on service, when the supply of fresh vegetables is likely to fail.

55. *Cocoa.*—Cocoa was issued under exceptional circumstances. It can be given either as a substitute for, or in addition to, the ration of tea. For soldiers employed on night duty during the winter, or exposed to rain and damp, cocoa would prove valuable.

56. *Lime or Lemon Juice.*—The occasional use of lime juice is essential with a view of preventing scurvy, and should be given whenever troops are employed on service. The daily ration per man was fixed at ½ oz., to be increased when fresh green vegetables were not procurable.

57. *Portable Food.*—The following portable foods were also tried, the reports on which have been forwarded to the Adjutant-General in India:—

Edward's desiccated soup.	Whitehead's army food.
Kopf's food (erbswürst).	„ variegated soup.
Mulligatawny.	Condensed milk.
Scotch broth.	

(*a.*) *Edward's desiccated soup* and *Kopf's erbswürst* (pea soup) have both been well reported on; the former, however, requires to be carefully cooked to make it palatable, and is chiefly adapted for sick and hospital use; the latter (Kopf's) is a pea soup with fatty materials, easily prepared, portable, and well adapted for special emergencies. These soups were issued to troops as an addition to the ordinary meat ration in cases where food had to be hastily prepared.

(*b.*) *Kopf* and Company's *Scotch broth and mulligatawny* are of less nutritive value than the erbswürst, and less applicable to the requirements of troops on service.

(*c.*) *Whitehead's army food* may be issued when it is impracticable to issue a full ration; but Whitehead's army food was not so favourably reported on as the erbswürst.

(*d.*) *Whitehead's variegated soups* have been issued to the sick, and found to be liked by them. They have also been given when the meat ration has been poor in quality, or as an addition to soup.

(*e.*) The *condensed milk* was found to be of much benefit to the sick, owing to the difficulty of procuring fresh milk on service.

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58. As it is necessary on account of transport that the varieties of preserved and portable foods should be limited to those absolutely necessary, the following would appear to be the most essential and serviceable varieties :—

Australian meat.	Cocoa.
Pickles.	Lime juice.
Preserved potatoes.	Erbswürst (Kopf's).
Compressed vegetables.	

Assorted concentrated soups and condensed milk for use of sick.

59. The maintenance of a supply of the above in this country ready for any emergency that may arise would probably be difficult; but it might be practicable, instead of indenting on England for them when war has been declared, to keep a stock of the foregoing articles or of some of them and occasionally issue them to troops in lieu of a portion of the ordinary ration.

60. *Tobacco.*—It is desirable that tobacco should be supplied to troops on service, or that they should have the opportunity of purchasing it. The want of tobacco is a sore deprivation to the soldier, who is generally a smoker; it is not advisable in a campaign or epidemic to alter the habits of a life-time, and when there is hard marching and scanty food, tobacco soothes and sustains.

61. *Dieting Sick.*—All the sick in field hospitals received the ordinary field ration, supplemented by such medical comforts as their individual cases rendered necessary. This was not only more convenient, but also a more economical method than issuing the hospital diets. The system answered admirably, and met all the requirements of the sick. On service it would be impracticable to diet the sick on the system adopted in cantonments.

62. *Extra Hospital Establishment.*—In addition to the establishment ordinarily sanctioned in regimental hospitals, the following were specially authorised for field service :—

Transport sergeant for each section of the field hospital, and each base hospital.

Pack-store sergeant and private for each base hospital.

Carpenter for each section of field hospital, and each base hospital.

Bildars, two for each section of field hospital.

Puckhallie bhistie, one for each base hospital.

Conservancy sweepers and bildars, two for each base hospital.

Cutler, one for each division or column.

63. *Native Cutlers.*—With regard to the cutler the sanction of Government was solicited on the 6th November 1878, and after much correspondence the sanction of Government was ultimately received on the 26th May 1879. The cutler was considered necessary for keeping the surgical instruments constantly in a serviceable condition, and to avoid the delay involved in sending them to India for that purpose.

64. *Medical Equipments and Stores under Trial.*—The following equipments, stores, &c., in connexion with the hospital service were experimentally tried :—

(*a.*) Field panniers.
(*b.*) Field medical companions.
(*c.*) Surgical dressing packets.
(*d.*) Gelatine preparations of medicines.
(*e.*) Surgical wadding.
(*f.*) Surgical tissue.

(*a.*) The "*Field panniers*" have proved to be specially suitable for active service. A pair fitted with medical and surgical stores and a small quantity of medical comforts weigh about 200 lbs., and can be carried by a baggage mule, pony, or camel. The stores are sufficient to render a regiment operating from the brigade or divisional head-quarters independent of the field hospital for about a month. A pair was allowed to every corps unit.

(*b.*) The "*Field medical companions*" were also very favourably reported on. This now forms, as do also the field panniers, part of the permanent equipment in India.

(*c.*) "*Surgical dressing packets*" were issued to individual soldiers in the proportion of 10 per cent. of the strength.

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(*d.*) The "*Gelatine medicine preparations*" have not been sufficiently tried to admit of a decided opinion as to their value. The object of their design is excellent and capable of improvement and extension; they are extremely portable, very convenient, and would be useful in the hands of a medical officer for certain emergencies, but they are open to the objection of their use being very restricted by their character and the small number of drugs incorporated in the gelatine, and by their liability to spoil, and not being capable of being locally manufactured.

(*e.*) The "*Surgical wadding*" and "*tissue*" did not appear to possess any special advantages for war service.

65. *System of Conservancy.*—The ordinary trench system of conservancy was followed in the field, and, as far as practicable with the means at command, it was efficiently worked. Every practicable sanitary precaution was adopted in regard to the conservancy arrangements, the cleanliness of camps, and the preservation of water supply from defilement. Various expedients were adopted for the removal of *excreta* from the field hospitals.

66. *The Campaigns in Afghanistan.*—It would be almost impossible to furnish such a report of the campaigns in Afghanistan as would embrace detailed information concerning the various forces in the field, operating, as these were, at such wide distances apart, and under different conditions of climate, altitude, water-supply, marches, &c.

67. The operations, if both wars be included, may be said to have commenced in November 1878, and terminated in October 1880 on the arrival of General Sir F. Roberts' force in India and the previous withdrawal of General Sir D. Stewart's force.

68. The fighting was in a great measure of a desultory character and made up of numerous minor engagements; but that on a larger scale consisted of the attack on Ali Musjid on 21st and its capture on the 22nd November 1878, and subsequently the following:—

The Peiwar Kotal was forced on the 2nd December 1878.

The action of Charasia took place on the 6th October 1879.

The engagements at and around Kabul extended from the 10th to the 24th December 1879.

The battle of Ahmed Khel was fought on the 19th April 1880; and that of Kandahar on the 1st September of the same year.

69. Reference must be made to the special reports of the principal medical officers in charge of divisions and brigades, and to the several sanitary reports and medical transactions for the years in question, for details of the medical arrangements and other information in regard to the foregoing; but it may be interesting to advert to a few matters in connexion with the Kabul-Kandahar march.

70. *Kabul-Kandahar March.*—In July 1880 there were in the field in Afghanistan two separate *corps d'armée* with distinct bases of operation, the one dependent on the Punjab, the other on Sind and Bombay—the Northern and Southern Afghanistan field force respectively. The objects of these two forces were quite separate and distinct, and they formed perfectly independent commands.

71. At Kabul steps had been taken for evacuation of the country, and by the middle of August the last of the brigade was to leave Kabul. The force of 18,000 men was to return to India on two lines—one portion by Kuram, the other by the Khyber; and at this date the sick were in motion towards Peshawar, and stores, &c., had been, or were being, despatched to the base. On the 28th July the news of General Burrows' defeat reached Kabul by telegraph.

72. The orders for the march of a force from Kabul with the object of relieving Kandahar were received on August 3rd. The troops were in a good state of health, in high fettle, and had undergone a long training in the field. The constitution of the force, its equipment, and all other arrangements were practically matters decided on locally.

73. The force consisted of an infantry division of three brigades of four battalions each (*viz.*, one British and three Native battalions), a brigade of cavalry consisting of four regiments (one British and three Native regiments) and an artillery command of three batteries of mountain artillery.

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74. The march had of course to be conducted without a base of operations or communications of any kind, through a hostile country, towards a definite point (Kandahar). For the details and all arrangements connected* with this march reference must be made to Deputy Surgeon-General Hanbury's special report thereon; it must suffice, in this place, to touch on a few of its more salient points.

75. The march commenced on 9th August. Ghazni, a distance of 97½ miles, in which the Zamburak Pass (7,000 feet) and the Sher-i-Daban Pass (9,000) feet were crossed, was reached on the 15th August. For this part of the march an average distance of $13\frac{13}{14}$ miles was covered daily. The remaining distance of 134½ miles was covered in eight days, or $16\frac{3}{8}$ miles daily.

76. Ten thousand one hundred and forty-eight troops, 8,143 native followers and 11,224 animals, including cavalry horses, composed the column; the daily supplies for all these were drawn from the country after arrival in camp. Food was distributed and cooked with fuel (difficultly procurable and brought in from a distance) during the eight days' march from Ghazni to Khelat-i-Ghilzai. The longest marches on any one day were 20 miles from Ghazni to Zerghalta, and 21 miles from Mukur to Panjak.

77. *En passant*, it may be interesting to refer here to some other marches recorded:—General Crawford marched with the 43rd, 52nd, and 95th Regiments of Foot to reinforce Sir A. Wellesley, at the battle of Talavera in July 1809; the brigade marched 62 miles in 26 hours, carrying arms, ammunition, and pack—in all a weight of between 50 and 60 pounds per man.

In the late Franco-German war very long and difficult marches were performed by the Germans. Dr. Roth,† who served as chief medical officer with the Saxon army, mentions that the 18th division marched, from the 29th October to the 17th November, 55½ German miles, which is equal to 260 English miles in nine days, or nearly 18 miles a day; while on the 16th and 17th December, in the various manœuvres about Orleans, they marched 54 English miles. They were very heavily accoutred, and the roads were bad. A company of a regiment of Chausseurs of Macmahon's army, after being on grand guard, without shelter or fire, during the rainy night of the 5th–6th August, started at 3 in the morning to rejoin its regiment in retreat on Neiderbroun, after the battle of Weissenburg. It arrived at this village at 3.30 in the afternoon, and started again for Phalsbourg at 6 o'clock. The road was across the hills and along forest tracks, which were very difficult for troops. It arrived at Phalsbourg at 8.30 o'clock in the evening of the next day. The men had therefore marched part of the night of the 5th–6th of August, the day of the 6th, the night of the 6th–7th, and the day of the 7th till 8.30 p.m. The halts were eight minutes every hour, from 3.30 to 6, one hour in the night of the 6th–7th, and 2½ hours on the 7th; altogether, including the halts, the march lasted 41½ hours, and the men must have been actually on their feet about 30 hours, in addition to the guard duty on the night before the march, The exact distance is not known, but considering the extreme difficulty of that rugged mountain country and the bad weather, this is, perhaps, the most toilsome march on record.‡

78. To return to the Kabul-Kandahar march. In addition to the daily ration a tin of pea soup was issued to every two British soldiers daily from the 18th August, which was commonly taken before the march commenced; lime juice was regularly issued. Extra rum was issued three times during the march to all British and Native spirit drinkers, and an extra ration of meat to those who did not drink rum, with a meat ration for all followers whenever sheep could be obtained.

79. The general hospital system was followed, distributed by brigades, the sick of different European corps of the brigade (whether artillery, cavalry or infantry) being admitted and treated indiscriminately into one and the same section of a field hospital, which acted independently and was in no respect attached to any one European corps of the brigade with which it was. With Native regiments the regimental system was followed.

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* Army Medical Department Report for 1879, page 313, Appendix, Medical Diary of the March of the Field Force of Lieut.-General Sir F. Roberts, V.C., G.C.B., from Kabul to Kandahar.

† "Deutsche Vierteljahrs, furoffentl. Ges.," Vol. 3, 1871, page 62.

‡ Army Medical Department Report for 1870, Vol. XII., page 248, Appendix, Dr. Parkes's Report on Hygiene for 1871.

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80. The hospital equipment was in a satisfactory condition. No reduction was made in the transport allowed for hospitals on field service; and there was a three months' supply of medicines, with sufficiency of stores and medical comforts.

81. One of the weakest points of a force operating in India is at all times the sick carriage composed of doolie bearers; and on the occasion of the Kabul-Kandahar march this was a special source of anxiety, owing to the strain to which the doolie-bearers had been subjected.

82. As has been already stated, many of the hospitals had been closed, and their sick and wounded had, in anticipation of the evacuation of the Kabul-Khyber line, been despatched in large numbers to the base; and it was not until some of these bearers had returned that the necessary complement of sick carriage for the force destined to march to the relief of Kandahar could start. These men only returned to Kabul by the 7th August; they had, many of them, been doing double marches back, and had undergone much fatigue and labour in striking and pitching tents, packing and unpacking baggage animals, &c. Consequently they were not physically in a fit condition to recommence their march with General Roberts' force without previous rest, and, as might have been expected, they, to a great extent, broke down during the march.

83. The sick transport amounted to—

Doolies	11
Dandies	321
Doolie-bearers	2,192
Ponies for riding	286
Donkeys	43

Six camels were detailed specially for the conveyance of certain equipment which could not be adapted for mule transport. This embarrassment appears to have arisen from no adequate reason, and to have been attributable to a misconception of what should have been the principle to be followed on such occasions.

84. Some time before the date of the reception of an order for the movement of the troops out of the Kabul-Khyber line, the staging system of transport had been discontinued. This system, by which from 35 to 38 sick had been regularly evacuated every other day, had been followed, previously to the arrival of General Stewart's force at Kabul, the bearers going and returning from post to post, and doing single marches every day. By this means the amount of sick carriage, supplies and equipment at each post could be, and had been, maintained on a reasonably small scale, but still quite adequate for efficiently carrying out the evacuation of the sick from front to base, and it is believed that up to the time the staging system was discontinued, there were no chronic cases of disease or injury remaining in the field hospitals and rest depôts *en route*. Nor is it probable that the medical or hospital supplies, carriage, or stores at any one post were more than actually required for the force at that post. It seems, therefore, that if the staging system had been maintained, even in principle, the evacuation of the line could have been as easily and readily accomplished, without the risk of breaking down the machinery altogether by sending large convoys of sick at one time for a long distance, necessitating as this must do the undue concentration of sick carriage at one or more, and perhaps distant, places. What is generally a weak portion of a force had been subjected to an unnecessary strain just at a time when it was about to be called upon for unusual exertion.

85. *The Staging System.*—The advantages of the staging system of sick carriage, indeed of transport generally, are obvious, but the disadvantages of large convoys experienced during the late operations not being so apparent may be pointed out.

(*a.*) The accommodation of a large number of sick is sometimes difficult. The conservancy establishment being small also, the influx of large numbers of natives and sick taxes the conservancy arrangements.

(*b.*) The limited number of cooks, bhisties, and hospital servants allowed necessitated kahars being told off to perform their duties. Under the staging system there was a bhistie, cook, and other hospital servants at each post.

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(*c.*) It has been found that the per-centage of breakages of doolies and dandies is much greater with the larger than with the smaller convoys.

(*d.*) Difficulty of moving and disciplining a large number of kahars, so as to distribute the work among them properly.

(*e.*) General comfort of the sick is far greater with the staging system; tents, &c. were always ready pitched, and medical officers and proper hospital attendants present at each post.

(*f.*) The absence of a large number of kahars at any one time causes a considerable pecuniary loss to Government, as much of the commissariat work was done by them.

86. TABLE showing the ADMISSIONS and DEATHS in the BENGAL EUROPEAN ARMY in AFGHANISTAN in the CAMPAIGN, 1878-80 (exclusive of Officers).

Months.	Average Strength.	Total Admissions.	Deaths.		Ratio per 1,000 of Strength.		
			From Sickness.	From Injuries.	Admissions.	Deaths.	
						From Sickness.	From Injuries.
1878 - - -	12,757	4,339	36	8	340·1	2·82	0·63
1879.							
January - -	9,870	1,261	41	2	127·8	4·15	0·20
February - -	10,658	823	20	4	77·2	1·88	0·38
March - -	10,703	728	16	2	68·0	1·49	0·19
April - - -	11,473	1,194	17	51*	104·1	1·48	4·45
May - - -	11,968	1,267	68	2	105·7	5·67	1·17
June - - -	10,755	1,712	265	3	159·2	24·64	0·28
July - - -	7,576	1,271	102	—	167·8	13·46	—
August - -	7,232	725	68	—	100·2	9·40	—
September - -	7,023	747	20	—	106·4	2·85	—
October - -	8,103	947	42	14	116·9	5·18	1·73
November - -	9,412	873	18	4	92·8	1·91	0·42
December - -	9,205	949	32	46	103·1	3·48	5·00
Average for 12 months	9,500	Total 12,497	Total 709	Total 128	1315·5	74·63	13·47
1880.							
January - -	10,646	948	59	9	89·0	5·54	0·85
February - -	12,170	811	25	3	67·1	2·05	0·25
March - -	12,345	962	15	4	76·3	1·22	0·32
April - - -	12,631	1,254	8	11	99·3	0·63	0·87
May - - -	13,413	1,193	21	3	88·9	1·57	0·22
June - - -	12,390	1,475	35	1	119·0	2·82	0·08
July - - -	12,158	2,115	51	4	174·0	4·19	0·33
August - -	11,063	1,306	43	3	126·3	3·89	0·27
September - -	6,386	1,050	38	32	164·4	5·95	5·01
October - -	4,504	736	35	2	163·4	7·77	0·44
Average for 10 months	10,771	Total 11,925	Total 330	Total 72	1107·1	30·64	6·68

* Battle - - - - - - 4
Suicide - - - - - - 1
Drowning at Kabul river, 10th Hussars - 46
51

87. The weekly and annual returns supplied by the Bombay Army are so incomplete that no table for that portion of the army can be supplied; but it may be incidentally mentioned that at the defeat at Maiwand on the 27th July 1880 it was found, when the whole of the survivors had come in, that the losses amounted to 964 combatants killed, 108 wounded, and 7 missing; 331 followers were also killed, and 7 wounded.

88. Regarding native troops, the average strength of the Bengal regular army in Afghanistan was 15,091 in 1879, giving 35,928 admissions into hospital, *i.e.*, 2380·8 per 1,000 were admitted into hospital, with 1,282 deaths—1,222 from disease and 60 battle.

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89. *Young and old Soldiers.*—The question of the relative powers of old and young soldiers to endure fatigue and exposure in a campaign trenches on our present military organisation as an Imperial power.

90. The main elements of the problem are: given an insular power holding military sway over many and distant colonial possessions, the constitution of the country being inimical to conscription in any form, where recruits must be taken young to be secured, how best to maintain an army of adequate strength and efficient quality, with a reserve available in case of national necessity?

91. *The Advantages of Short Service.*—The short service system tends to procure a celibate army, thus relieving the State of great expense; and supposing, what is an absolutely essential element, a sufficient interval of time to elapse, a reserve would be secured on a system practically the reverse of that hitherto followed; for in our previous wars (Peninsula, &c.) the places of the veteran troops in the field were taken by immature recruits from home, while now the places of the young troops in the field would be filled up by the older soldiers from the reserve.

92. *Its Disadvantages.*—On the other hand, the disadvantages are, that the men composing an army are manifestly on physiological grounds not sufficiently matured to withstand the hardships and fatigue incidental to field service; they have resiliency enough, but insufficient resistance; they are drilled but not trained. The difficulty of getting non-commissioned officers of the right stamp, and in requisite numbers, is increasingly great; the expense, so far as the invaliding, transport of time-expired men, and troop service system is concerned, is great; the composition of a corps is liable to frequently recurring fluctuations, in consequence of men taking their discharge when their training is perfected, the weakening of discipline and organisation and *esprit de corps* entailed thereby, and the reserves may deteriorate or not become available when required.

93. As far as susceptibility to climatic disease on the one hand, and inefficiency in the field from lack of power to withstand fatigue and hardship on the other, the young and unacclimatised corps and soldiers of the present day contrast unfavourably with the older and acclimatised corps and men of the past or present time.

94. Such appears to have been the experience of the present war, as well as the general opinion of the medical officers as expressed in their reports on the subject. The soldier is subject to the same law as the inferior animals, viz., that the adult and matured possess powers of endurance which the young and immature do not, and a soldier under 23 years of age is consequently relatively inefficient in the field.

95. It is necessary, however, to avoid exaggerating the effect of age on efficiency. It is a mistake to suppose that a soldier of over 10 years' service is better than one of five; he very frequently is not so good. In cheerfulness, prodigality of life, and resiliency, the younger man notoriously enjoys the advantage. His physical defect, as far as campaigning is concerned, is want of endurance; his frame and constitution require good food and periodical rest. For a short, or a series of short efforts, a young man is quite as capable as an older one, but in sustained effort or labour and under privation he is manifestly his inferior. For many obvious reasons, older men are required for the non-commissioned ranks, and it is a State question how such men are to be retained, but physical and moral degeneration are allied and commonly advance *pari passu.**

96. The disease of which young and unacclimatised soldiers die in this country is enteric fever. The liability in the case of the soldier of over seven years' service in India to die of this disease is 3·87 as contrasted with 82·44 in the young, and 13·69 in the class resident from five to seven years, reckoning the liability at 100.

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* This was written before the late changes in regard to continuous service of non-commissioned officers had been carried out.

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97. STATEMENT showing the DEATH RATES of NON-COMMISSIONED OFFICERS and MEN at the several Ages, arranged in Quinquennial Periods, of HER MAJESTY'S BRITISH FORCES serving in AFGHANISTAN during the Years 1879–80.

Ages of the Men.	1879.			1880.		
	Actual Strength on 1st January.	Died.	Died per 1,000 of Strength.	Actual Strength on 1st January.	Died.	Died per 1,000 of Strength.
Under 20 years	Not obtainable.	27	—	317	15	47·32
20 and under 25 years		212	—	4,798	129	26·89
25 „ 30 „		263	—	4,367	139	31·83
30 „ 35 „		101	—	2,306	54	23·42
35 „ 40 „		52	—	938	22	23·45
40 and upwards		21	—	270	2	7·41
Total	—	676	—	12,996	361	27·78

The strength of the men on active service during 1879, according to different ages, cannot be obtained; 12,996 was the actual strength present on the 1st of January, and not the average strength of the year; 27·78 per 1,000 of these men died. The average death rate for the year was, of course, much greater.

98. *Malarious History of Corps affecting their Efficiency.*—One of the most striking elements in the production of disease and mortality in the field is the previous malarious history of a corps. This significant and important influence of the previous medical history on what is to become the subsequent medical history of a corps has long been known, and was adverted to prior to the commencement of the war. Other things being equal, corps affected with malaria exhibit consistent statistics, viz., high rates of sickness and mortality following exposure.

99. It was so with British, and it was still more so with Native corps. The system becomes liable to internal visceral congestion on the occasion of even slight variations of temperature, to say nothing of extreme variations. A peculiarly rapid and fatal form of pneumonia was the most common morbid manifestation of the effects of exposure in a malarious subject.

100. In the Native troops and Native followers the mortality in some instances was excessive and undoubtedly attributable to preventable causes, such as badly selected corps or individuals, insufficient food, clothing and raiment, bad shelter, inadequate hospital accommodation and care; added to which the habits of the men themselves were directly productive of disease, such as stripping to cook their food, sleeping completely and closely enveloped in the bed covering, re-breathing again and again the same air, &c.

101. Although this subject is somewhat foreign to a report on British troops, it is touched upon here, because it applies with equal force to all armies at all times.

102. Strength is requisite for the physical exercises of a soldier, maturity for endurance, and courage, discipline, and *morale* will supply and perfect the remainder; but even these will not suffice, if the dictates of common experience and physiological knowledge be cast aside. That the soldier must be fed in proportion to the work required of him, and clothed and sheltered in accordance with the nature of the climate in which he is serving, are obvious considerations of prudence and State economy as well as humanity.

103. *Diseases of Peshawar Valley and Khyber.*—The Peshawar Valley is notoriously malarious and unhealthy at certain seasons, especially during the autumn and early winter months, and when cholera invades this locality it commonly persists until November. The highlands between Jellalabad and Kabul are, however, comparatively healthy.

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104. *Cholera.*—It may be remarked that cholera had appeared at Peshawar and upwards along the Khyber line in May 1879; that it subsequently appeared at Kabul itself; but at the date of the return march of the troops from Northern Afghanistan after the treaty of Gundamuk of that year that portion of the 1st Division posted at Gundamuk was healthy. As there were pressing sanitary reasons for the removal of the 2nd Division in the Khyber and Peshawar valley, and as the instructions were that the 1st Division could not be left where they were, but political and financial reasons pressed for the return of the force as a whole, it was recommended to march it back to cantonments in India, with the exception of certain portions of the force left to garrison the posts up to the limits of the treaty. The force marching back in 1879 suffered severely from cholera; but later on, in 1880, on the return march after the second war, it suffered little from that disease, the difference in the two cases being attributable to the presence of epidemic cholera which the troops had therefore to encounter on the former occasion, but not on the latter. The reports of former years, and the special report on this subject for 1879, enter more fully into the details.

105. Every precaution was taken on both occasions to protect the troops, as far as practicable, from sunstroke and cholera, by selecting the coolest period of the 24 hours for marching, by arrangements at the rest depôts, by the provision of ample hospital accommodation for men arriving at the base and by their transfer to the hills. In addition, during the return march of the troops in 1881, there was a good supply of ice and non-spirituous drinks at the railway stations, and the number of troops occupying a railway carriage was much reduced.

106. *Fevers.*—But as regards fever, some of the places in the Khyber were disproportionately malarious and unhealthy; as, for instance, Lundi Kotal, Ali Musjid, Dakka, and Jellalabad, but especially the former.

107. Speaking broadly, there is a clear line of demarcation between the fevers prevalent in the Peshawar and Khyber valleys at different seasons. The fevers of the hot weathr are continued in type, ranging from the more ephemeral to that of enteric fever; while in the autumn and commencing winter the fevers are more distinctly malarious—agues and remittent fevers and dysentery—attended with abdominal pains, bilious vomiting, and occasionally a collapsed condition closely mimicking that of cholera itself. It must be borne in mind that the direct and immediate effects of these malarious climates afford no correct gauge or index to the amount of injury to health incurred, for the indireet and remote effects are some times traceable for years afterwards, in liability to fevers, neuralgia, diarrhœa, splenic or hepatic affections and pigmental changes in the blood and viscera.

108. *Lundi Kotal.*—It is not very clear why Lundi Kotal should be so unhealthy, for its elevation is about 3,500 feet above sea level: the positions in which the troops were located were good, and their general sanitary condition was fairly good also—better, rather than worse, than that of other stations *en route;* the water-supply, although insufficient in quantity owing to the distance of its source from the camp (3 miles up a steep hill), was of good quality. There seemed to be something inherent in the position and climate of the place which rendered it unhealthy; for all diseases, whether cholera, fevers—malarious, simple, continued, or enteric—and dysentery, were unduly prevalent there. It is very possible that the malaria-laden air heated by the rocks on either side of the Khyber route, which formed a sort of funnel up to the Kotal, became condensed at that post, owing to its relative coolness, and that the malaria so conveyed became concentrated and deposited at the Kotal.

109. In 1879 cholera proved very persistent and fatal at this station and Ali Musjid.

110. In the year 1880, the health of the troops stationed at Lundi Kotal was fairly good for the first three months of the year, the admission rate being about 20 per cent. of strength, but for the next three months the admissions were about 55 per cent. of the strength, with 15 deaths, giving a mortality equal to about 80 per 1,000 of strength per annum. Five of the deaths were from enteric fever. From July to 27th August the admission rate was about 37 per cent. of strength and 7 deaths, two being from enteric fever, and the most unhealthy months (September and October) had not then been reached.

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111. The 1/17th Regiment, the 1/12th and 1/18th Royal Irish all suffered unduly whilst stationed at Lundi Kotal.

112. *Southern Afghanistan and Kuram Force.*—In a general sense the remarks made in regard to the troops in the Peshawar and Khyber valleys apply to those of the Kuram.

113. The highlands are as healthy as, but colder, specially in winter, than Simla and other hill stations in India. From Kohat onwards, *viâ* Thull, Badesh, Kheyl, Kuram, and Shalozan to the Peiwar, and from the trans-Indus posts up to Kandahar, except the elevated portions of the route in the Khoja-Amran range, the country is very hot, malarious, and generally unhealthy; there is great diurnal variation between the day and night temperatures, the latter being very cold.

114. Kuram valley is about 73 miles long. Commencing at Thull (2,200 feet) it gradually ascends at about 50 feet per mile until the foot of the Peiwar Pass is reached (about 7,000 feet); the top of the Kotal is about 8,400 feet above sea level. The valley, which is about 2 miles in width at Thull, widens out at Shalozan to 14 miles. The cultivation is rice; trees are rare and stunted; in fact, the wide plain is scarcely more than a waste covered with boulders and stones. The waters used was supplied by the Safed Koh, and was described as of good quality; but at Thull and in its neigbourhood the water was said to be of inferior quality, and brought from the Kuram river. Much of the diarrhœa and dysentery prevalent was ascribed to its use.

115. Vegetables were very scarce in the Kuram valley; but lime juice was issued as a substitute.

116. The British troops suffered from malarious fevers, diarrhœa, and dysentery, with respiratory diseases in winter, and anæmia became marked in troops occupying these localities for any time.

117. The 85th Regiment, which on its joining the Kuram force was a very fine and healthy regiment, suffered greatly from the foregoing complaints.

118. *Enteric Fever.*—The views adopted by European pathologists in regard to this disease being invariably caused by some specific or other fœcal contamination of air, water, milk, &c., or by personal infection, seem to be too exclusive to embrace all the facts encountered in Indian practice, and to be irreconcilable with, if not opposed to, some of them. Any complete and well adjusted theory must cover such facts as the following:—

I.—The remarkable proclivity to the disease exhibited by the young and recently arrived soldier.

II.—The occurrence of cases at certain seasons at a large number of stations occupying in the aggregate a vast area of country.

III.—The isolated nature of such cases in a considerable number of instances.

IV.—Their disproportionate occurrence at certain definite seasons, *e.g.*, at the hottest and driest when the wells are at their lowest, and after the monsoon when they are at their highest water-level. [Any one practically acquainted with the amount of rainfall during certain periods of a monsoon season, or with the aggregate amount for the whole period of a monsoon in India, will readily appreciate the fact that rubbish and articles of the size of boots, bottles, &c., will be rapidly carried down from such regions as the Himalayas, for example towards Karachi or Calcutta, as they happen to pass into the tributaries of the Sutlej and Indus on the one hand, or those of the Jumna and Ganges on the other.]

V.—At almost all the posts occupied by European troops co-operating with the various columns in Afghanistan, extending from the British territory in India up to Kabul and Kandahar, cases of enteric fever appeared, some of which posts and camps must, in all human probability, have been occupied for the first time during the late campaign.

VI.—Medical officers have tried unsuccessfully in a number of instances, which in the aggregate form a large total, to establish reasonable proof of the operation of those causes which have been assigned as the only and invariable causes of enteric fever by many pathologists.

Of course it is not said that such causes did not exist, nor that where they did, they were not followed by the disease in question; but what is asserted

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is, that in India and Afghanistan it is impossible to obtain any reasonable proof of their invariable presence and adequacy to account for the phenomena.

119. *Practical conclusions.*—The following conclusions have been derived from the experience of the Afghan campaigns :—

I.—The first and most obvious thing in war is preparedness. The troops took the field on 21st November 1878 for the attack on Ali Musjid. Government sanction to the system set forth in the précis bears date 8th November 1878, and in the meantime General Biddulph's division had taken the field. The date at which the campaign was expected to open was only intimated to the Surgeon-General, British Forces, in a non-official communication dated 13th November 1878. And throughout the earlier part of the operations there was the same tardiness in assenting to the most essential details. Instead of having everything known and arranged as soon as the troops were formed into brigades and divisions, operations had actually commenced, and even terminated, before the sanction of Governmen had been received to some of the recommendations of this office.

II.—All officers, non-commissioned officers and men, doolie-bearers and followers, should be medically inspected before proceeding on service.

III.—The previous medical history of a regiment forms an important consideration in determining its fitness for service, the probabilities being that corps which have been exposed to, and suffered from the effects of, malaria will prove inefficient on service, and crowd the hospitals and unnecessarily strain the hospital service at an early stage of the campaign.

IV.—The result of experience and physiological knowledge alike prove that men and animals cannot endure the hardships and fatigue of a campaign without their feeding and clothing being adjusted to the work required of them; apart from differences of race and habits, the Native soldier was not in the late campaign sufficiently fed and clad for the nature and amount of his duties. The clothing supplied to Native followers should be issued to them before, and not after, they have undergone the change from a hot to a cold climate.

V.—Sick carriage should be under the orders and at the disposal of the Principal Medical Officers of divisions.

VI.—A properly organised army hospital Native corps for European troops. This long ago received the sanction of Government, and its formation has been carried out since the war.

VII.—That bearer columns or some organisation for providing a similar service should be instituted. The doolie-bearers now separately employed under the Commissariat and Medical Departments should be consolidated and instructed for a given period during each year; the men so trained should take the field and be replaced by others employed temporarily, and not the reverse.

VIII.—The doolie-bearers should not only be organised, but have Native non-commissioned officers attached to them for carrying out the orders of the medical officer or transport officer in charge, acting under the Principal Medical Officer or senior medical officer present.

IX.—The staging system should be adopted when practicable as the best and most economical method of evacuation of sick.

X.—Special field equipment adapted for a campaign is essential. This was partly supplied from England, partly by adaptation of the existing medical equipment. The recommendations of a committee on this subject have been approved by Government, and the equipment will be suitable and common to all Indian commands.

Further experience in the field and development of the principles of modern field service will tend more and more to the simplification, interchangeability, and mobility of all medical and surgical equipment.

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XI.—The Principal Medical Officer of a force should be empowered to detail some one (a medical officer) to act as his secretary or assistant; that is, if he be expected to exercise a personal and practical, instead of a merely clerical, supervision.

XII.—The field hospital unit of whatever number of beds should be readily divisible into divisions and subdivisions, each complete in itself, say 100 beds=4 sections of 25 beds each. Each field hospital should have a subordinate of the Commissariat Department attached to it Hospital accommodation for officers and warrant officers is essential. A senior medical officer should be posted to charge of field hospitals, the juniors should accompany corps.

XIII.—Each base or general hospital should be a supply depôt for medical and surgical stores, and field hospitals should replenish one another and the requirements of regimental units.

XIV.—There should be a sufficient establishment and number of kahars attached to a hospital to enable it to move with the force; to pitch and strike tents, pack and unpack, and load animals, &c.

XV.—A hospital should move in rear of the column to which it belongs, and in front of all baggage, and be provided with a guard.

XVI.—All medical officers and medical subordinates should be mounted. It is perhaps more necessary in their case than in that of any other class of officers.

XVII.—All clerical labour in the field should be reduced to a minimum; a diary and tally book should suffice for medical officers with corps; only important cases, or those of medical and surgical interest, should be taken at the field hospitals, more elaborate reports and documents being prepared at general and base hospitals. A most important reform would be the introduction of carbon books, or some very portable and easy means of conducting all business and correspondence in the field, by which an original document and the copy thereof could be made at one and the same time, the copy remaining as the record.

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APPENDIX No. IV.

REPORT OF THE MEDICAL TRANSACTIONS IN NATAL AND THE TRANSVAAL DURING THE BOER REBELLION, 1880-81.

By Deputy Surgeon-General J. L. Holloway, C.B.

On the 16th December (Duigaan's Day) 1880, the malcontent Boers of the Transvaal threw off their allegiance to the British Crown, hoisted the flag of the South African Republic at Heidelburg, and declared their independence. A formidable army was raised by them, and the stations of the Transvaal occupied by British troops were soon invested by the Republican forces.

Sir George Pomeroy Colley, Governor of Natal and the Transvaal, at once took steps to collect such troops as were at his disposal and to march to the Transvaal to the relief of the beleagured garrisons.

Meetings of staff and departments were convened at Government House, at which the plans of the campaign were discussed, and clear instructions were given to each head of department for his guidance.

The establishments were at that time on a peace footing. The transport remaining at the conclusion of the Zulu and Sekukuni wars had been sold off. The ordnance stores had been much reduced, almost all the extensive ambulance service in use during the late wars had gone to the hammer, and hurried preparations had to be made from such relics of these stores as were available.

All the force that could be got together only mustered about 1,300, and therefore the requirements for it from each department were at first not very large.

As far back as 1st November 1880, I had been preparing for the eventuality of war. All the field panniers not absolutely required in the Command I had ordered to be returned into store where they were at once refitted, and by the middle of December I had 30 pairs of these ready for immediate issue, and a good supply of medical and surgical materials in store.

	Officers.	Men.
Mounted Squadron	6	124
Royal Artillery	4	70
Royal Engineers	1	6
Naval Brigade	5	123
2/21st Foot	2	83
58th Foot	16	487
3/60th Foot	18	419
Army Medical Department	4	—
Army Service Corps	5	10
Army Hospital Corps	—	22
Total	61	1,344

The force composed as per margin left Pietermaritzburg for Newcastle by detachments; each of these was accompanied by a medical officer, a field hospital in proportion to its size and wants, generally one of 25 beds, an ambulance and a water cart.

On the departure of the last party that left Pietermaritzburg, which consisted of the Naval Brigade and some artillery from the Cape under the command of Commander Romilly, R.N., I proceeded to Newcastle to organise the hospital at that base. I found the field hospital equipment was unsatisfactory, and the tents were especially out of repair, still with the indefatigable exertions of Surgeon-Major Babington, the Senior Medical Officer of the force, matters were improved as far as possible. The ambulances which had been lying up for a year were not in good order, and those of colonial make with spring platforms, designed by my predecessor, had by time and ill usage lost the spring and elasticity they formerly possessed. These were sent to a local wheelwright and put into better repair, and the tents were patched and mended.

The bandsmen of the 58th Regiment and 3/60th Rifles were practised in stretcher drill, and on the eve of the advance 38 natives, supplied by the Colonial Government for the purpose of stretcher bearers, arrived at Newcastle just in time to advance with the column.

There were at Fort Amiel, Newcastle, 14 huts which had been built for a hospital during the Zulu war. These huts had, with the exception of 4, been

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handed over from time to time to the military. On the outbreak of hostilities I obtained sanction for their reversion to this department, and 10 of them were at once got ready for wounded, the others being retained as stores. Hospital accommodation for 130 patients was thus provided at the base, which with 125 beds in the field hospital raised the total number of beds to 255, or 19 per cent.; this at the time was thought ample. In the meantime I telegraphed to Pietermaritzburg to send up more tents and hospital equipment, and, on the 24th January 1881, 44 tents were sent up in three ambulances, and equipment for 100 more beds shortly followed.

The hospitals, both field and base, were on the non-dieted scale, liberally supplemented by extras, such as fresh vegetables, poultry, milk, eggs, soups, sago, and the many articles comprised in the list of medical comforts sent out by Government.

The medical officers of the column consisted of Surgeon-Major T. Babington, Senior Medical Officer of the force, Surgeons J. Ring, J. McGann, and A. J. Landen, Army Medical Department, and E. E. Mahon, R.N., with Mr. Newbold Smith as dresser, and to aid in convoy duties. These gentlemen were under the command and disposal of the Senior Medical Officer for duty in the field hospital and attachment to corps, as necessity arose. Not a single complaint of this arrangement has reached me, but from the regimental officers I have heard nothing but praise of their services rendered in the field and at the field hospital.

The base hospital, Newcastle, was in charge of Surgeon-Major A. H. Stokes, assisted at first by a local practitioner, Dr. Gubbins, who had done good service in the Zulu war. The medical staff of South Africa had been reduced since the Zulu and Sekukuni campaigns to nearly its fixed establishment, but there were medical officers locked up in the Transvaal, who as the column advanced, would become available for duty with it. Three, for instance, were shut up in Standerton with a force of 500 only.

On the 24th January the little force, which had been detained at Newcastle by the incessant rains, made its first march to Signal Hill, 4 miles distant, and halted. Notwithstanding the care taken to make the column as compact as possible, and by keeping down all superfluous impedimenta, to march in as close a column as possible, there was much straggling during the first march. It reached Prospect Hill on the 26th January, and encamped there.

Royal Artillery, 75 - { Four 9-pounders. Two 7- „
58th Foot, 487 - Five companies.
3/60th Foot, 339 - Four „
Mounted Infantry, 61.
King's Dragoon Guards and Army Service Corps, 60.
Naval Brigade and Rocket Battery, 90.
Total officers, 50.
Non-commissioned officers and men, 1,122.

The 27th was foggy, and the attack on Laing's Neck was deferred till the following morning, when the force as per margin moved out of camp at 6.30. I shall in regard to this and the subsequent actions confine myself to the doings of the Army Medical Department, giving no more description of these battles than will render the former clear.

"The action" says Surgeon-Major Babington in his report, "commenced at 9 o'clock, a.m., by the guns and rocket battery opening fire on the Boer positions; this lasted about an hour, and then the mounted infantry charged a hill to the right which was strongly held by the enemy; they gained the summit, but were outnumbered and had to retire. Their leader, Major W. V. Brownlow, King's Dragoon Guards, being down, his horse killed under him, and Troop Serjeant-major Lunny killed, contributing no doubt to their discomfiture.

"The 58th Regiment then charged a steep and high hill somewhat to the right of the Neck, and met the Boers at close quarters on the top, and for a time it seemed as if the Boers were about to retire, but they got strongly reinforced, and opened a terrible fire on our men, which caused them to waver and then retire down the hill.

"The engagement did not seem to me to last more than half an hour, and as it occurred in a circumscribed space in sight of every one, there was no delay in succouring the wounded, and having them conveyed to the second line of surgical assistance. The 3/60th Rifles, although under fire were not engaged, therefore when the 58th retired, Surgeon Ring joined Surgeon McGann, and the two were unceasingly employed until late in the evening attending to the wounded.

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"I formed a dressing station in a dip a little to the left of the guns, all the wounded were conveyed there from the actual scene of battle, and were re-dressed when necessary, the fractured limbs were put up in splints, and in a fit condition to be conveyed either in stretchers or ambulances back to camp.

"The troops returned to Mount Prospect, and, under instructions from the General, I brought all wounded in there, but so severe and serious were the wounds that it was past 10 o'clock at night before the last man was brought into camp. None were left on the field."

As the force moved out of camp on the 28th, Surgeon J. McGann, accompanied by 12 bandsmen of the 58th Regiment, 20 native bearers, 8 Army Hospital Corps, with haversacks, water bottles, &c., and 12 stretchers followed the 58th Regiment, a hack mule with medical and surgical appliances followed this party. Surgeon J. Ring with a similar stretcher party and equipment accompanied the 3/60th Rifles, who at first led the advance. But on the Rifles halting in front of the guns, he went on with a company of that regiment thrown out as skirmishers as far as Laing's farm; Surgeon-Major Babington had in the meantime established a dressing station close to the guns and on their left. Surgeon E. E. Mahon, Royal Navy, attended the Naval Brigade, which occupied Laing's Farm, and subsequently gave great assistance to Surgeon-Major Babington at the dressing station, as also did dresser Smith. Surgeon Landon was left in medical charge of the laager at the camp, which was guarded by about 250 men. On seeing the men of the 58th falling rapidly, Surgeon Ring moved on with four stretchers from Laing's farm, hitherto unassailed, to aid the wounded of the 58th, but coming within range of the Boers, who fired on his party, he had to make a detour out of the line of fire, by which he reached the rear of the 58th Regiment, the men of which, after severe loss, passed through his party as they retired down the hill covered by artillery fire. Here Surgeon Ring joined Surgeon McGann, and both proceeded up the hill attending to the wounded. While this was going on the Boers passed by them taking their arms, but offering no hindrance to their duties, on the contrary, when the action was ended they supplied many of the wounded with water, and lent a horse to Surgeon Ring for the purpose of sending an Army Hospital Corps man quickly to camp for more surgical appliances. Every wounded man was brought into camp before dusk. The casualities during the day were:—killed, 6 officers and 69 non-commissioned officers and men; wounded, 4 officers and 119 non-commissioned officers and men; of the latter 12 died subsequently of their wounds, making the total loss killed 87.

Surgeon Landon had in the meantime got the hospital ready for the reception of the many wounded, and both there and on the field there was an abundant supply of beef tea, arrowroot, rice, milk, wine, and brandy.

Surgeon-Major Babington states that Surgeons Ring and McGann were the whole day employed in dressing the wounded on the field, and that no officers could have behaved better; and Surgeon Landon after getting the hospital ready for the wounded joined the Senior Medical Officer on the field and gave him valuable assistance at the dressing station, as also did Surgeon Mahon, Royal Navy, and dresser Smith; they were ably and zealously assisted by the non-commissioned officers and men of the Army Hospital Corps. The English ambulances which had alone been brought into action had to be supplemented by the ox ambulance (Colonial.) Extra stretchers, splints, and appliances were brought out in the latter.

The native bearers also behaved well, though their work of bringing the wounded was most fatiguing. His Excellency the late Sir George Pomeroy Colley was much pleased with the medical arrangements and when so expressing himself to Surgeon-Major Babington, the Senior Medical Officer, desired that officer would communicate the same to me.

On the 2nd February a convoy of 20 wounded was sent in to Newcastle at Mount Prospect. They arrived safely without any opposition being made by the Boers.

It had been arranged with the concurrence of the General Officer Commanding to send on the morning of the 8th February another convoy of 21 wounded in the English ambulances to Newcastle; and this left the camp at 6.30, but when it arrived within a distance of 10 miles from Newcastle, it was stopped

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by about 20 Boers, and the party were made prisoners. The mules were taken from the ambulances and driven away. The horse on which Mr. Smith, the dresser, rode was also seized; after which the Boers broke the Geneva flag, and as they rode away the leader informed our party that if they left the place his men would fire on them. The cases were fortunately for the most part slight, and the Senior Medical Officer had supplied the convoy with one day's cooked rations, cocoa and milk, beef tea, &c. There was also a divisional box of medical comforts complete. I may here state that this convoy remained on the ground till the following day (9th February) when mules were sent from Newcastle and the ambulances all got in that day.

At 5 a.m. on the morning also of the 8th February, Surgeon-Major Babington received intimation that the Major-General Commanding intended moving out of camp with a small force for the purpose of escorting the mail across the Ingogo. The Senior Medical Officer was informed that a medical officer would be required, but not an ambulance; also that it was intended to bring the party back to dinner, which was ordered to be ready by 3 p.m.

Sir George Colley left camp about 8.30 a.m. on the 8th. On the north bank of the Ingogo he left, to guard the drift, one company 3/60th Rifles, and two 7-pr. guns, manned by 11 men, and then crossed the river with 3 companies 3/60th (8 officers and 293 non-commissioned officers and men), 60 non-commissioned officers and men of the Mounted Infantry under Major Brownlow, and 2-9 pr. guns, with 27 non-commissioned officers and men under Capt. Greer and Lieut. Parsons, R.A., the force being about 380 all told. As soon as it reached the top of Schuin's Hoogte, about 12 noon, the battle commenced and lasted till 6 p.m. The loss was very heavy, resulting in 4 officers and 59 non-commissioned officers and men killed, and 4 officers, and 17 non-commissioned officers and men wounded.

There is no doubt that the action of Schuin's Hoogte was wholly unexpected. The staff officer who issued instructions to this department would, had an attack been conjectured, have allowed an ambulance and water cart to have accompanied the column. Moreover the dinners, as already stated, were to be in readiness at 3 o'clock, on the return of the men to the camp.

There are therefore few, if any, plans of battle to furnish. Most of the casualities, I am informed, occurred while the men were being got into position, after this all lay down except the gunners when serving the guns, and these suffered severely in consequence.

The General with the remains of his force recrossed the Ingogo at nightfall and got back to camp between 10 and 11 that night.

Surgeon McGann, who accompanied the force, had been provided with four stretchers and 20 native bearers, with a good supply of materials for dressing, &c. But on hearing heavy firing Surgeon-Major Babington at once despatched 5 mule waggons, 5 ox ambulances, a water cart, stretchers, blankets and waterproof sheets, and an ample supply of medical and surgical materials, medical comforts, wine, brandy, &c.; the whole under the charge of Surgeon Ring, with whom was Surgeon Landon. I will quote Surgeon Ring's interesting account of what took place after the departure of his party from camp.

"We reached a company of 58th Regiment under Lieut. Jopp entrenched a short distance off the road, about 3 miles from camp, who informed me that the Boers were already in possession of the Ingogo drift. This officer signalled to camp for instructions, and I was told to go on with the 5 mule waggons, water cart, men, &c., and to leave the ox ambulances behind. I proceeded with Dr. Landon accordingly towards the drift, crossed it and reached the vicinity of the battlefield about 3 p.m. The Boers here intercepted us and objected to our proceeding further, stating that they would fire on us if we did. At this time we were under fire, and after three quarter of an hour's halt we retired out of fire along the road about 500 yards. We remained here until dark when we returned to the river, where we met some of the 58th and 3/60th under Captain Hornby. We remained close to the drift in a position indicated by that officer until 11.30 midnight, when Lieutenant Wilkinson 3/60th passed us, informing us of the result of the fight, it was then raining and blowing hard. I immediately inspanned the mules and proceeded up the hill, it was raining, cold and pitch dark, and it took us till 3 o'clock to reach the battlefield, where we found Dr. McGann and the Rev. Mr. Ritchie with the wounded. We went over the battlefield with lanterns looking for the wounded and rendering assistance.

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Before 8 a.m., 40 wounded under the charge of Surgeon McGann were sent by me into Newcastle according to orders. The Boers objected to the waggons leaving the field earlier. I and Surgeon Landon remained with the rest of the wounded until fresh waggons came from Newcastle, and until the ox ambulances left behind on the road came up, when they were filled with wounded and sent in to Newcastle in charge of Surgeon Kirwan, who had come out from Newcastle to bring them in. The ox ambulances would have been up earlier but the drift had become impassable. The Boers treated the wounded as kindly as could be expected and did everything I asked."

This large and unexpected accession to the wounded by the battle of Ingogo filled the hospitals and encroached on the supplies of medical and surgical materials at the front. Very large quantities of these were being pushed up by transport waggons, ambulances, and Scotch carts, but the swollen rivers detained them on the road, for the condition of the latter made them almost impassable, and supplies arrived very slowly. Fortunately the original provision had been large, and by means of the post-cart small quantities of the more important articles needed, carbolic acid, olive oil, lint, bandages, &c., were got up for current wants, till the store waggons could arrive; at no time was a want of any medical or surgical appliance experienced during the campaign.

The tents, originally in a bad condition, had become worse by wear and tear, and a rainy season the most inclement for many years; unfortunately those tents for which I made requisition by telegram for Newcastle, and which were despatched from Pietermaritzburg on the 25th January, did not reach Newcastle till early in March. The delay had occurred in consequence of ammunition having been packed with them in the ambulances in which they were conveyed, and the whole was therefore, by the order of the Assistant Adjutant-General, detained at Ladysmith till an escort could be provided. The lack of tents and field hospital equipment has been the only want felt during the war; and this has been mainly due to the Field Hospital of 200 beds, requisitioned for by the Ordnance Store Department on Christmas Day, not having reached Natal till April, and I trust that in subsequent wars, all camp equipment may either be consigned direct to the officer of orderlies to the force, or such steps be taken as may ensure its prompt supply to this Department, which suffers in efficiency and in reputation by the want of it.

On the 27th February I received a telegram from Mount Prospect "Successful action with the Boers now going on." This intimation was wholly unexpected. Sir Evelyn Wood was at Pietermaritzburg, and there had been no rumour of the imminence of active operations.

The battle of Amajuba was indeed proceeding; but its results were the reverse of successful. I shall leave a description of the battle to others, but may briefly say, that it had been resolved by Sir George Colley to occupy the summit of a mountain commanding the "Neck" by which the latter would become untenable. A force left Mount Prospect at 9 o'clock on the night of the 26th February. On reaching the base it was found that the Gatling gun could not be got further and it was sent back to camp, The force got to the top of the hill about 5 a.m., and some desultory firing was commenced. It is said that the Boers, seeing the troops in possession, commenced to "inspan" their cattle with the intention of decamping. In the meantime lulled by the seeming security of their position and by the fact that each soldier had had to carry his rifle, 70 rounds of ammunition, great coat, waterproof sheet, and provisions for three days up a mountain, in parts almost perpendicular, the little force abandoned itself to rest and sleep, a certain number of men having been placed on the highest point of the mountain to keep a good look out. But if some of the Boers were "inspanning" for retreat, others had far different designs in view. It is said that about 40 of them were told off to pick off the lookout men of our party, and that they did this so effectually that not only could no alarm be given, but no one on our side was aware that the lookout had ceased. A party of about 150 Boers then crept up the mountain, boulder by boulder unobserved, and, ariving at the summit, poured a deadly fire into our tired and unsuspecting force. Surprise was soon followed by utter confusion, and resulted in retreat.

Our loss was very heavy, his Excellency Sir George Colley was killed together with 3 officers and 83 non-commissioned officers and men, and there were 10 officers and 130 non-commissioned officers and men wounded. Of the

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Medical Department, Surgeon A. J. Landon was shot as, while dressing some wounded men, he ordered his party of Army Hospital Corps to lie down. Surgeon-Major Cornish, who accompanied the reserves at the base of the mountain was killed while assisting to convey a wounded man on a stretcher to the ambulance, Surgeon E. E. Mahon, R.N., remained with a few Army Hospital Corps men on the top of Amajuba, and continued there throughout the night of the 28th in attendance on the wounded till relieved by Surgeon-Major Babington and Surgeon Ring at daylight the following morning, when he went into camp with the wounded. His conduct was very meritorious. The only surviving medical officer on the field, he continued his duties under a galling fire, holding up a bit of lint, bandage, or whatever was at hand to indicate the duty he was engaged on, a white flag at first held up, having been shot out of his hand.

Very short notice was given to the department to make its arrangements for the battle. I cannot do better than quote Surgeon-Major Babington's report on them and the subsequent medical transactions.

"I only got warning at 9 o'clock p.m. that the force was about to start, and I had but half an hour to make my arrangements. I immediately warned Surgeon A. J. Landon, A.M.D., and Surgeon E. E. Mahon, R.N., to proceed with the force and sent with them a pack horse with all surgical necessaries and stimulants. They had also with them seven stretchers carried by a sufficient number of bearers, a non-commissioned officer and three men, Army Hospital Corps.

"At 1 a.m. of the 28th February, two companies 3/60th Rifles, numbering 75 men and three officers, started to garrison an intermediate post between the camp and the top of the Amajuba. With these companies I sent Surgeon-Major H. Cornish, A.M.D., a pack-horse and two pack-mules, with a large supply of surgical necessaries and supplies of various sorts, four stretchers, a sufficient number of bearers and the hospital sergeant, an orderly, 92nd Highlanders, and Private Lowe, Army Hospital Corps.

"Firing commenced at 6 o'clock a.m., and shortly after ceased altogether until about 12 noon when it became fast and furious. I then sent out Surgeon Ring, A.M.D., with all the ambulances in camp, nearly all the non-commissioned officers and men Army Hospital Corps, and everything which could by any possibility be wanted, with orders to him to go as far as he could up the mountain and there form a dressing station. He went on until he came under fire and the horse of the conductor of the ambulances was wounded. He was able to afford assistance to many wounded; but as I knew the majority of those hurt were on or near the top of the mountain, and as I heard rumours that the medical officers who went out the previous night were amongst the wounded, I decided to leave camp and go up myself. I accordingly started with a flag of truce between 3 and 4 o'clock p.m., met the Boer General, Smit, who gave me ample powers and promised me every security to all employed with me. Surgeon Ring and I searched the field for wounded until nightfall and had them conveyed to Neil's Farm at the foot of the mountain, where I had organised a temporary field hospital.

"It was at this time we unhappily found Surgeon-Major Cornish, lying fatally wounded through the left lung, on the slope of the hill. He was conveyed on a stretcher to the farmhouse and made as comfortable as was possible in his condition. At dark I started with Surgeon Ring and a stretcher party of 100 men, carrying stretchers, blankets, waterproof sheets, wine and brandy, &c., to ascend the mountain to bring down the numerous wounded we knew to be there. It was one of the worst nights I ever experienced. A dense fog prevailed and it was raining and blowing heavily, and as dark as pitch. We got, as we afterwards found out, near to the top of the mountain, and then entirely lost our way. The fog concealed everything around us, and was so thick that the lanterns were of no use. We were then obliged to halt until daybreak, in spite of the anxiety of everyone to proceed further. At the first glimmer of day we again started on our search, and, with great difficulty, owing to the fog still continuing, found the top spur of the mountain, and came across the wounded, all under the care of Surgeon Mahon, R.N., who was fortunately unhurt. I found there Commander F. Romilly, R.N., shot through the abdomen and Surgeon Landon, A.M.D., wounded through the right lung. As many of the wounded as we had men to carry were at once

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sent down to the farmhouse, over ground so difficult that it took till evening to carry them down. Everyone worked hard and all were got down except four who were yet to remain another night atop of the hill in charge of Surgeon Ring. In the evening I made my way down to the farm, and managed to get into camp before nightfall, nearly all the wounded lying there; and then returned to camp myself, where I knew I was urgently required.

"The next evening the four remaining wounded were got down to the farmhouse; and as then the total number there was 24, I placed Surgeon Gormley, A.M.D., in charge of them, supplying him with all he required for their comfort and treatment. As they were very comfortable in the farmhouse I proposed leaving them there for a few days as the camp hospital was greatly crowded and the weather most severe.

"On the morning of the 3rd March two officers and 49 men were transferred to Newcastle, which gave me plenty of room in the field hospital, and I may say that the crowded condition only lasted a few hours, as I got plenty of extra tents pitched, and then had ample room.

"Lance-Corporal Farmer* and Private Sealey, Army Hospital Corps, were dangerously wounded while on the top of the hill in the performance of their duty; and Surgeon Landon informed me before he died, that they performed their work during the whole day, coolly and well.

"Surgeon E. E. Mahon, R.N., behaved as well as any officer could do, and I feel sure only for the deaths of Sir George Pomeroy Colley and Commander F. Romilly, R.N., that he would have been specially mentioned."

The wounded continued to progress admirably both at Mount Prospect and at Newcastle, but about the beginning of March a few cases of very severe injuries (four in all) assumed a gangrenous condition, and a report was at once circulated in the home press that hospital gangrene had shown itself at Mount Prospect. No single case of hospital gangrene ever occurred. The gangrenous condition assumed by the cases referred to was partly due to the unavoidably rough handling of the wounded in getting them down the Amajuba Mountain and also to constitutional feebleness, as three out of the four cases occurred in men who arrived from India, where they had long served and were also of intemperate habits.

Thus in the space of a month and before re-inforcements of medical aid and material, demanded by telegraph on Christmas Day, could arrive at the front, 327 for the most part grievously wounded men had to be provided for, while to add to the difficulties, the roads to the front were almost impassable. The mail carts even being detained for days together by the swollen state of the rivers. Large supplies of medical and surgical materials, medical comforts, &c. were however pressed up by transport waggons; and the post carts conveyed carbolic acid, oil, lint, bandages, &c., until such time as the former could arrive at the front and in this way the supply, originally large, was kept up.

The Bloemfontein nurses engaged by Sir George Colley at the outbreak of hostilities did splendid duty at the base hospital, Newcastle, and were aided also by Mrs. Hawthorne, wife of the Commandant, Natal, who went up taking with her an excellent trained nurse, Miss Williams from Pietermaritzburg.

The charitable societies organised at Durban, Pietermaritzburg, and Newcastle added to the efficiency of the hospitals by the supply of jellies, blanc mange, fruit, and any other luxuries procurable; and Lady Pomeroy Colley and Mrs. Mitchell (wife of the Colonial Secretary), assisted by other ladies, aided still more materially in the comfort and surgical treatment of the wounded by making hair pillows of useful sizes and in large numbers, "Nightingales," "Garibaldi" shirts, &c., &c., for their use.

On the arrival of re-inforcements, Brigade Surgeon Sinclair was appointed Principal Medical Officer of Newcastle on the 22nd February, and was assisted by an ample staff of medical officers and Army Hospital Corps, officers and men, while the surgical appliances, &c. sent up had all arrived, filling the medical stores at that station with every possible requirement.

The wounded in these three actions, amounting to 327 in all, filled the hospitals at Mount Prospect and Newcastle, and it became necessary to clear out these by removal of the convalescent and slighter cases.

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* Since decorated with the "Victoria Cross" for his gallantry.

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I had proposed on the cessation of the rains, to establish rest camps at the recognised halting places between Newcastle and Pietermaritzburg, at which latter station it was for many reasons desirable to establish the large general and invaliding hospital. But the exceptionally heavy rains showed no appearance of abatement, and the roads continued almost impaseable, and the rivers quite so; except where punts had been established, and these were frequently washed away. Under these circumstances I proposed that convoys of wounded of 50 or so at a time with tents, cooking appliances, &c. complete, and with a sufficient staff of Army Hospital Corps, should leave Newcastle periodically as the wounded became well enough to bear the journey down, a distance of 175 miles, and over the most infamous roads conceivable. In this way, in the event of a swollen river bringing the convoy to a standstill, this would be comparatively of small consequence as all the elements for the comfort and treatment of the wounded would be at hand with the convoy, which would not be the case if by accident the latter was unable to reach a rest camp, on which it depended for them. I also opened a hospital for 50 beds at Ladysmith in which any cases that might have suffered by the journey could be detained, and all could get a rest before continuing the journey down.

His Excellency Sir E. Wood, however, for military reasons overruled my temporary objection to rest camps and under instructions from him I established them at once. They answered admirably, and though the first convoy was much exposed to weather, which continued very inclement, the wounded arrived improved by the journey.

After the action of Amajuba, the Boers leaving Newcastle for the present unattacked, proceeded in force to the Biggarsberg with a view no doubt to intercept the reinforcements on the way up country under Sir Evelyn Wood. But the rapidity of the General's movements frustrated their intentions, and they returned to the "Neck." It was however evident that Newcastle, which till this time had been the base of operations, was now become under changed circumstances the front; and the arrangements referred to for emptying the hospitals were very timely. It is due to Brigade Surgeon E. M. Sinclair, the Principal Medical Officer, Newcastle, to whom they were entrusted to say they were most efficiently carried out. In the selection of men fit to travel under a reasonable pressure from the military to get the hospitals empty, and in making provision for their arduous journey down country this officer showed judgment and consideration, and I am not aware of a single case that had suffered by the journey.

From the 21st January 1881 to the 15th May 1881 the reinforcements arriving from England and India were continually passing up to Newcsstle, but on the 12th March an armistice was arranged and renewed, till on the 23rd March peace was concluded with the Boers. A force of about 7,000 of all arms has since the latter date been encamped at Newcastle or in its neighbourhood to the present time (31st May 1881), the camping ground being, for sanitary reasons, changed from time to time. This force is equipped, ready to be put in motion at any time, though complaints are still received that the field hospital equipment and tents are somewhat deficient, due, no doubt, to much of the ordnance store equipment embarked for this country having been disembarked at Woolwich on the announcement of peace.

The ambulance service during this war consisted of English ambulances, a few of the old Colonial pattern, designed by Surgeon-General Woolfryes for use in the Zulu War, and of omnibuses purchased locally. To this establishment I added six very serviceable ambulances, constructed here under my superintendence. The whole capable of conveying about 400 wounded.

The disadvantages of the old Colonial pattern ambulances were their cumbrousness, being made out of common country waggons, the seats arranged in rows back to back down the centre of the waggon (with a view no doubt to the chief weight being well in the centre) left no room for lying down cases; for which moreover the ponderous nature of these vehicles rendered them unsuited. I selected a light American waggon, the fore wheels of which "lock under," and keeping the principle of the spring platform as in the old pattern ambulance, I had the axletrees widened to admit of the seats being placed, without risk, at the sides. These were made to fold down, leaving, if required, the whole extent of the spring platform available for lying down cases. The seats were divided at the centre, so that half of the length of the

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waggon could be devoted to sitting up cases, and half to lying down; and the seats, when folded down, formed good "backs" for the wounded to recline against if so disposed. I am of opinion that for wars in this country this ambulance is preferable, except in the field itself, to the English ambulance which will only contain two men lying down, and the breaks of which are not sufficiently powerful for the steep gradients; while from the relative position of the hind seat and the wheels, the fixing to them of a suitable brake for this country is a difficulty which has not yet been overcome.

The medical arrangements for the Divisional Field Force are those laid down in the regulations on that head, and are devoid of interest.

Statistical.—The attached tables marked A, A 1, A 2, and A 3, give the admissions among the officers, non-commissioned officers and men, showing the results as far as obtainable up to 1st June.

The table marked A 2 gives the operations on officers, non-commissioned officers, and men of the Natal Field Force with the results.

There were a few cases of inflammation of an erysipelatous nature, and one or two cases of erysipelas, but on the whole there was a remarkable freedom from this.

Hospital gangrene was reported to have broken out at Mount Prospect, but on inquiry it turned out that these cases, four in number, were ordinary cases of gangrene, due to obstruction of the circulation from wounds of arteries and traumatic aneurism occurring in men who were of intemperate habits, or whose constitution had been undermined by long service in India, and in the campaign in Afghanistan. No true hospital gangrene occurred.

The results have been most satisfactory, as will be seen in table marked A 2.

A table of penetrating wounds of chest and abdomen, marked A 3, may, although incomplete, prove of interest.

Officers.

A.

CLASSIFIED RETURN of WOUNDS and INJURIES of every kind received in action, at Laing's Neck, Ingogo, and Amajuba, admitted into the Hospital of the Natal Field Force, between the 28th January and 12th March 1881 :—

Regions of the Body wounded or injured.	Remained on the	Since admitted.	Amputations.			Other Operations.	Died.	Discharged to Duty.	Transferred.		Remaining on the 1st June 1881.
			Primary.	Secondary.	Excision.				To other Hospitals.	To England.	
All wounds and injuries - -	—	18	—	2	2	1	6	3	—	5	4
Wounds of the neck - -	—	1	—	—	—	—	—	—	—	1	—
„ „ chest - -	—	2	—	—	—	—	2	—	—	—	—
„ „ abdomen - -	—	1	—	—	—	—	1	—	—	—	—
„ „ back and spine -	—	1	—	—	—	—	—	1	—	—	—
„ „ upper extremities	—	6	—	1	2	1	—	1	—	1	4
„ „ lower „	—	7	—	1	—	—	3	1	—	3	—

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A 1.

Non-commissioned Officers and Men.

CLASSIFIED RETURN of WOUNDS and INJURIES of every kind received in action, at Laing's Neck, Ingogo, and Amajuba, admitted into the Hospital of the Natal Field Force between the 28th January and 12th March 1881.

Regions of the Body wounded or injured.	Remained on the	Since admitted.	Amputations.			Other Operations.	Died.	Discharged to Duty.	Transferred.		Remaining on the 1st June 1881.
			Primary.	Secondary.	Excision.				To other Hospitals.	To England.	
All wounds and injuries - -	—	312	6	25	3	1	33	81	—	143	55
Wounds of the head - -	—	8	—	—	—	—	2	1	—	3	2
" " face - -	—	9	—	—	—	—	—	7	—	2	—
" " neck - -	—	4	—	—	—	—	—	4	—	—	—
" " chest - -	—	28	—	—	—	—	8	6	—	12	2
" " abdomen - -	—	13	—	—	—	—	7	—	—	5	1
" " back and spine -	—	18	—	—	—	—	3	2	—	8	5
" " upper extremities	—	113	6	7	3	—	2	42	—	58	11
" " lower "	—	108	—	18	—	—	9	19	—	46	34
Wounds with direct injury of the large arteries not being cases of compound fracture.	—	2	—	—	—	1	1	—	—	1	—
Wounds with direct penetration or perforation of the large joints.	—	9	—	—	—	—	1	—	—	8	—

A 2.

NATAL FIELD FORCE.

OPERATIONS PERFORMED and their RESULTS.

Officers.

Injury.	Operation.	Primary.	Secondary.	Total.	Results.		
					Died.	Recovered.	Total.
Gun-shot wound, left arm, oblique upper end of humerus shattered.	Amputation shoulder joint -	—	1	1	—	1	1
Gun-shot wound, elbow joint -	Excision elbow joint -	—	1	1	—	1	1
" left wrist -	" wrist - -	—	1	1	—	1	1
" knee and leg	Amputation lower one-third thigh.	—	1	1	1	—	1
" shoulder -	Pieces of bone removed from clavicle and scapula.	—	1	1	—	1	1
	Total - -	—	5	5	1	4	5

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Non-commissioned Officers and Men.

Operations.	Primary.	Secondary.	Total.	Results. Otherwise.	Died.	Recovered.	Total.
Upper extremity—							
Amputation of fingers	2	—	2	—	—	2	2
„ forearm, upper one third	2	—	2	—	—	2	2
„ arm, middle one third	—	3	3	—	1	2	3
„ upper one third	1	1	2	—	—	2	2
„ at shoulder joint	1	3	4	—	—	4	4
Lower extremity—							
Amputation of foot (Symes)	—	1	1	—	—	1	1
„ leg, lower one third	—	4	4	1	2	1	4
„ „ below knee	—	3	3	1	—	2	3
„ thigh, lower one third	—	5	5	—	2	3	5
„ „ upper one third	—	4	4	—	2	2	4
„ hip joint	—	1	1	—	1	—	1
Other operations—							
Excision, elbow joint	—	2	2	—	—	2	2
„ shoulder joint	—	1	1	—	—	1	1
Ligature of common carotid artery	—	1	1	—	—	1	1
Extraction of bullets	Uncertain.						
Total	6	29	35	2	8	25	35

A 3.

TABLE showing some of the SERIOUS WOUNDS.

Nature of Wound.	Admitted.	Died.	Recovered. Duty.	Invalided.	Remaining.
All wounds—chest	28	8	6	12	2
Penetrating lung	?	8	—	2	2
Perforating chest	?		—	10	—
All wounds—abdomen	13	7	—	5	1
Penetrating	?	7	—	—	1
Perforating	?		—	5	—
Total	41	15	6	17	3

STATISTICAL RETURN of KILLED and WOUNDED in the Boer War, 1880–1.

Many interesting cases occurred among the numerous wounded, both of the attacking force and the beleaguered garrisons shut up in the Transvaal.

The proportion of recoveries amongst the serious cases was greater in the Natal Field Force, but this is to be accounted for in many ways; although they had all they required in the shape of surgical appliances and medical comforts, water was in many cases difficult to procure in sufficient quantity, and in several instances the allowance was only two pints per head a day.

The space available was very limited, and in consequence it was not practicable for sanitary measures to be carried out as fully as desirable.

The sick, moreover, were frequently, and in some cases constantly, under fire; and no doubt moral depression, owing to the existing state of things, tended to lower the power of the wounded, and gave them less chance of recovery.

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The attached tables show the results of the war and operations in detail, and give the destination of the wounded as far as can be ascertained up to 1st June.

B.

Officers.

CLASSIFIED RETURN of WOUNDS and INJURIES of every kind received in action, admitted into the Hospitals of the Natal and Transvaal Forces between the 16th December 1880 and 12th March 1881.

Regions of the Body wounded or injured.	Remained on the	Since admitted.	Amputations.			Other Operations.	Died.	Discharged to Duty.	Transferred.		Remaining on the 1st June 1881.
			Primary.	Secondary.	Excision.				To other Hospitals.	To England.	
All wounds and injuries - -	—	32	—	3	2	1	10	11	—	6	5
Wounds of the head - -	—	2	—	—	—	—	—	2	—	—	—
" " neck - -	—	1	—	—	—	—	—	—	—	1	—
" " chest - -	—	3	—	—	—	—	2	1	—	—	—
" " abdomen - -	—	2	—	—	—	—	1	1	—	—	—
" " back and spine -	—	2	—	—	—	—	2	—	—	—	—
" " upper extremities	—	8	—	1	2	1	—	1	—	2	1
" " lower "	—	13	—	1	—	—	4	6	—	3	5
Wounds with direct penetration or perforation of the large joints.	—	1	—	1	—	—	1	—	—	—	—

B 1.

Non-commissioned Officers and Men.

CLASSIFIED RETURN of WOUNDS and INJURIES of every kind received in action, admitted into the Hospitals of the Natal and Transvaal Forces between the 16th December 1880 and 12th March 1881.

Regions of the Body wounded or injured.	Remained on the	Since admitted.	Amputations.			Other Operations.	Died.	Discharged to Duty.	Transferred.		Remaining on the 1st June 1881.
			Primary.	Secondary.	Excision.				To other Hospitals.	To England.	
All wounds and injuries - -	—	509	9	34	5	2	67	199	—	176	67
Wounds of the head - -	—	29	—	—	—	—	7	13	—	6	3
" " face - -	—	14	—	—	—	1	—	9	—	5	—
" " neck - -	—	8	—	—	—	—	—	8	—	—	—
" " chest - -	—	48	—	—	—	—	14	12	—	19	3
" " abdomen - -	—	26	—	—	—	—	13	6	—	5	2
" " back and spine -	—	31	—	—	—	—	7	10	—	8	6
" " upper extremities	—	172	8	10	5	—	5	86	—	69	12
" " lower "	—	163	1	25	—	—	16	55	—	53	39
Wounds with direct injury of the large arteries, not being cases of compound fracture.	—	2	—	—	—	1	1	—	—	1	—
Wounds with direct penetration or perforation of the large joints.	—	15	—	—	—	—	4	—	—	10	1
Wounds with direct injury of the large nerves, not being at the same time cases of compound fracture.	—	1	—	—	—	—	—	—	—	—	1

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B 2.

RETURN of the KILLED and WOUNDED in the BOER REBELLION, 1880–81:—

Place.	Killed.		Wounded.		Died of Wounds.		Operations.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Bronkhorst Spruit	1	55	6	93	4	16	1	9
Pretoria	—	3	1	21	—	5	—	2
Rustenburg	—	—	1	3	—	—	—	—
Potchefstroom	1	13	5	58	—	7	—	2
Lydenburg	—	—	—	10	—	2	—	1
Marabastadt	—	—	—	2	—	1	—	—
Standerton	—	—	1	7	—	1	—	—
Wakkerstroom	—	—	—	3	—	2	—	1
Lang's Neck	6	68	4	115	1	12	5	35
„ Naval Brigade	—	2	—	1	—	—		
Ingogo	4	59	4	71	1	6		
On vedette duty	—	—	—	1	—	1		
Amajuba	2	67	9	112	3	14		
„ Naval Brigade	1	16	1	14	1	2		
Total	15	283	32	511	10	69	6	50
Re-admitted			—	13				
Total			32	524				

DISPOSAL of WOUNDED.

Distribution.	Wounded.		Regular Troops remaining under Treatment.	Wounded.	
	Officers.	Men.		Officers.	Men.
Died of wounds	9	67	Lydenburg	—	5
Invalided to England	6	176	Pretoria	1	6
Discharged to duty	11	199	Wakkerstroom	—	1
Remaining under treatment.	5	67	Newcastle	4	44
Died of wounds	1	2	Pietermaritzburg	—	11
Returned to their ships	—	12			
Remaining under treatment.	—	1			
Total	32	524	Total	5	67

B 3.

TABLE showing the TOTAL OPERATIONS during the War.

Officers.

Injury.	Operation.	Primary.	Secondary.	Results. Died.	Results. Recovered.	Total.	Remarks.
Gun-shot wound, left shoulder, oblique.	Amputation shoulder joint.	—	1	—	1	1	
Gun-shot wound, right arm and elbow joint.	Excision elbow joint	—	1	—	1	1	
Gun-shot wound, left wrist	Excision wrist	—	1	—	1	1	
Gun-shot wound, knee and leg.	Amputation lower one-third thigh.	—	1	1	—	1	
Gun-shot wound, shoulder	Bone removed, clavicle and scapula.	—	1	—	1	1	
Gun-shot wound, knee joint, chest and wrist.	Amputation lower one third thigh.	—	1	1	—	1	Mortally wounded.
	Total	—	6	2	4	6	

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Non-commissioned Officers and Men.

Operation.	Primary.	Secondary.	Total.	Results. Otherwise.	Died.	Recovered.	Remarks.
Amputation of fingers	3	—	3	—	—	3	
„ at wrist joint	—	1	1	—	—	1	
Amputation of forearm, lower one third.	—	1	1	—	—	1	
Amputation of forearm, middle one third.	1	—	1	—	—	1	
Amputation of forearm, upper one third.	2	—	2	—	—	2	
Amputation of arm, lower one third.	—	1	1	—	1	—	
Amputation of arm, middle one third.	—	3	3	—	1	2	
Amputation of arm, upper one third.	1	1	2	—	—	2	
Amputation at shoulder joint	1	3	4	—	—	4	
„ of foot (Symes)	—	1	1	—	—	1	
Amputation of leg, lower one third.	—	4	4	*1	2	1	*Re-amputated. (gangrene).
Amputation of leg, below knee.	—	4	4	†1	—	3	† Do. do.
Amputation of leg, at knee joint (Carden's).	—	1	1	—	—	1	
Amputation of thigh, lower one third.	‡1	9	10	—	7	3	‡Died.
Amputation of thigh, upper one third.	—	4	4	—	2	2	
Amputation at hip joint	—	1	1	—	1	—	
Excision of elbow joint	—	2	2	—	—	2	
„ of shoulder joint	—	3	3	—	1	2	
Excision of eye ball	—	1	1	—	—	1	
Ligature common carotid artery.	—	1	1	—	—	1	
Total	9	41	50	2	15	33	

A Brief Statement of some of the most Important Cases followed by Recovery.

Natal Field Force.

1. A private, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
2. A private, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
3. A private, 92nd Regiment. Perforating wound of abdomen. The bullet passed right through nearly the middle of the abdomen. Recovered and invalided.
4. A private, 92nd Regiment. Perforating wound of lung (gunshot). Recovered and invalided to England.
5. A drummer, 58th Regiment. Perforating wound of chest. Recovered and invalided.
6. A private, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
7. A private, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
8. A private, 58th Regiment. Penetrating wound of chest. Bullet lodged in chest. Recovered.
9. A sergeant, 58th Regiment. Penetrating wound of chest. Recovered and invalided to England.
10. A lance corporal, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
11. A private, 58th Regiment. Perforating wound of chest. Recovered and nvalided.

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12. A private, 58th Regiment. Perforating wound of chest. Recovered and invalided to England.
13. A private, 92nd Regiment. Perforating wound of abdomen. Recovered and invalided.
14. A private, 58th Regiment. Perforating wound of abdomen. Recovered and invalided to England.
15. A private, 58th Regiment. Perforating wound of lung. Recovered.
16. A sergeant, 58th Regiment. Perforating wound of abdomen. Recovered and invalided.
17. A lance sergeant, 58th Regiment. Perforating wound of abdomen. Recovered and invalided.

Transvaal Force.

Bronkhorst Spruit.

1. A lance corporal, 94th Regiment. Gunshot wound of face and chest, which probably penetrated a lung and escaped nearly under scapula. Recovered and invalided.
2. Compound fracture of thigh. Recovered without operation. Invalided.
3. Six bullets passed through one man. Recovered.

Potchefstroom.

1. A driver, R.A. Penetrating gunshot wound of chest, bullet lodged. Recovered and invalided.
2. A private, 2/21st Regiment. Penetrating gunshot wound of chest, bullet lodged. Recovered and invalided.
3. A sergeant, 2/21st Regiment. Depressed gunshot fracture of skull, bullet removed. Recovered and invalided.
4. A private, 2/21st Regiment. Partial fracture base of skull, gunshot. Recovered and invalided.

There were altogether 14 penetrating and perforating gunshot wounds of chest, and five penetrating and perforating wounds of abdomen recovered out of a total of 48 chest and 26 wounds of abdomen.

Report on the Siege of Standerton, Transvaal. By Surgeon-Major James Fraser, A.M.D.

Standerton is a small town situated 80 miles from Newcastle. The population consists of 150 whites and 100 blacks; the camp, which contains the hospital, a few huts, a small building used as an officers' mess, and a zinc store, is situated half a mile from the town. The garrison on the 18th December 1880, the date of the commencement of hostilities, was composed of a company of the 94th with a few departmental men, a total of 3 officers and 102 rank and file. On the 21st one company of the 58th, with two companies of the 94th, the whole under the command of Major Montagu, 94th, joined the garrison, bringing up the strength of the regular troops to 348 with 10 officers. In addition 60 volunteers and a few Native scouts, 7 transport conductors with 118 drivers, added to the civil population made up the number to be fed to close on 900. The town was occupied by a detachment of 100 men under the medical charge of Surgeon Lloyd. Surgeon-Major R. C. Parkinson assisted Surgeon-Major Fraser in the medical duties inside the fort and camp.

The climate during the siege was variable owing to the heavy rain which fell almost incessantly.

There was no actual scarcity of food at any time; a scale of rations was drawn out by the medical officer in charge, and the townspeople as well as the military were placed on it. Bread and flour ran short, and some of the cases of biscuits were found to be bad from water having found an entrance. Supplies of sugar, salt, &c. had to be carefully husbanded. The cleanliness and sanitary condition of the town, fort, and camp was most carefully attended to; drains dug, refuse burnt, and conservancy rigorously supervised.

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Lime juice was issued daily when the vegetable ration ran short. Coffee was always given early in the mornings. Extra blankets and cholera belts provided, and each soldier was supplied with a bandage and piece of lint for a field dressing.

The water supply was ample, and of fair quality; it was invariably filtered through sand and charcoal before used for drinking. The Dutch Church was used as a hospital, supplemented by tents, and afforded ample accommodation. There was an abundant supply of medical comforts, tinned provisions, medicines, and surgical material, disinfecting powder, and carbolic oil were the only articles that ran short. The hospital establishment consisted of Corporal Jackson and four privates, Army Hospital Corps. They performed their duties admirably. The health of the troops was during the siege excellent, only one death from disease occurred, viz., enteric fever, probably contracted in the town. There were seven admissions from gunshot wounds, one fatal; among the irregular troops also one death from gunshot wound, and one from bronchitis is recorded. During the siege the enemy made numerous attacks on our positions, but were invariably driven off with loss. Parties of our men were constantly sent out reconnoitring, often engaged the enemy, and the escapes of our officers and men were often almost miraculous. I attribute our small number of wounded to the skill and forethought with which the fort and works were constructed. The siege lasted 88 days, the investing force was never less than 1,200, and was at times over 3,000. On the 26th March peace was proclaimed, and the town opened to communication once more.

Report on the Siege of Marabastadt, Transvaal. By Surgeon Arthur Harding, A.M.D.

On the afternoon of the 28th December 1880 the news arrived of the disaster to the 94th; the troops were at once moved into tents inside the fort, supplies of food, water, medicines, and stores laid in, linen, oil, flannel, and canvas to make some extra stretchers were purchased locally, and preparations generally made for a siege.

On the 30th December the garrison was increased by the arrival of 2 officers and 39 men of the mounted police; 30 volunteers were also enrolled. Hostilities commenced on the 19th January and continued in the shape of skirmishes with our patrols and outposts till the 5th April, when peace was proclaimed. On the 17th February the Boers opened fire with two small cannon on the camp and continued the cannonade daily till the end of the siege; owing to their indifferent practice the casualties were few, three men were killed and nine wounded during the period of investment. Provisions have been good and abundant throughout, sugar was the only ration that ran short, fresh meat and fresh vegetables, pumpkins, and bread were issued almost daily, and there was an ample resource of tinned meat and biscuits. The health of the garrison was excellent, not a single man of the regular troops requiring admission into hospital. The supply of water was ample and good, it was obtained from a stream near the camp; a well was also sunk to give additional supply if required. The sanitary condition of the camp was carefully attended to, the urine and filth tubs were emptied at a distance night and morning. I consider the position and site of the camp to have been well chosen and its healthiness demonstrated by the fact that nearly 200 souls were shut up for three months in a confined place with little exercise and exposed to the arduous duties of warfare with almost perfect immunity from sickness.

Report on the Siege of Wakkerstroom, from the 28th December 1880 to the 24th March 1881. By Surgeon J. W. Martin, A.M.D.

At the commencement of hostilities the garrison of Wakkerstroom consisted of two companies of the 58th Regiment with Army Service Corps and Army Hospital Corps, a total of 177 non-commissioned officers and men, under Capt. H. M. Saunders, 58th Regiment. The camp was placed on a raised plateau a mile and a half from the town, from which it was separated by a

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river; in its immediate vicinity was a laager or fort recently completed. Forty volunteers from the town were enrolled, and a picket of 35 regulars under a subaltern officer sent down to assist in the defence of the town. They occupied the Dutch Church, which was loopholed and fortified. Medicines, medical comforts, and surgical appliances were sent down with a non-commissioned officer, Army Hospital Corps, and a civil practitioner, Mr. Ward, engaged to take charge of the party; he performed the duties entrusted to him in the most satisfactory manner. The sick were treated in tents pitched inside the fort for security, and a supply of medicines, &c. was kept at hand and ready for any emergency. The first attack on our position was made on the 7th January; beyond capturing 200 cattle no injury was inflicted on our force. From this date we were closely invested and subjected to continual and often heavy firing daily. Numerous narrow escapes from bullets occurred but no casualties; the enemy never approaching very near or indeed, having cover. On the 22nd February we made a sortie on a party of Boers seen about 1½ miles from camp, and had three men wounded; one of these died in five hours from a penetrating wound of abdomen, the second required amputation of the thigh, the third was a gunshot wound of the left leg, the bullet was removed and the case did well; the second case sank from shock and exhaustion the same night. On the 6th March the armistice was announced, and we received a supply of provisions, peace being proclaimed on the 24th. During the siege the health of the troops was excellent. Provisions never actually failed, though we were short of flour, forage, and fuel. Fresh vegetables when procurable were issued, at other times lime juice, erbswurst, and preserved vegetables. Rum was issued occasionally when the duty was unusually severe or the weather very inclement. Hot coffee was served out in the early mornings. The men behaved admirably under trying circumstances, and the Army Hospital Corps performed their duties in a most efficient and satisfactory manner.

Report on the Siege of Potchefstroom, Transvaal. By Surgeon K. S. Wallis, A.M.D.

On the commencement of hostilities the garrison consisted of two companies 2/21st Regiment, two guns N/5 Royal Artillery, with Army Service Corps and Army Hospital Corps, total strength of 198 non-commissioned officers and men, Lieut.-Col. Winslow, 21st Fusiliers, in command. Hostilities commenced on the 16th December. On this date a detachment 40 strong occupied the court house, and one of 20 the gaol; the main body being located in the fort. The two former buildings were isolated from the fort and from each other, were surrounded by the enemy, and after some hard fighting, one officer being killed and three men and an officer wounded, they were compelled to surrender. I sent down some surgical dressings by a native in the evening. I had a detachment field hospital of 12 beds with panniers, &c., which proved of great service. The hospital tents were pitched in the most sheltered position, but the firing was so incessant from the houses and tops of adjacent trees that I was obliged to excavate the ground to obtain more shelter. I had with me one non-commissioned officer and three privates, Army Hospital Corps, one of whom was wounded; they were sufficient for the first week; later on I had to employ regimental orderlies. The supply of medical comforts was small, and had to be used most sparingly; none could be obtained from the town. The enemy cut off our water supply early in the seige, and we were for some days on an allowance of three pints a day. Rain fell heavily at times, and we collected it in the hospital waterproof sheets and stored it in barrels. We dug wells, but obtained only a small supply, which I filtered through sand and charcoal before use, as it was very muddy. Our rations consisted of meat, biscuits, flour, and mealies. The allowance after the first four days was ½ lb. meat, ½ lb. biscuits daily, reduced to smaller quantities on the 22nd January, and supplemented with mealies. Groceries were exhausted on the 7th February. Lime juice was abundant, and I was able to issue ½ oz. daily during the siege; to this I attribute the absence of scurvy.

It was most difficult to preserve the sanitary condition around the fort; we were compelled to keep the cattle within our trenches, numbers of them died,

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and we could only bury them at night a short distance from the walls. The close proximity of the enemy, within a few hundred yards, prevented even the latrines being emptied and the refuse carried to any distance. Every effort was made by burying the excreta to preserve health. The hospital accommodation was quite inadequate for the number of sick and wounded (104 gunshot wounds alone came under treatment). I supplemented it by digging out small apartments at right angles to the trench, covering them with tarpaulin and corrugated iron obtained from the magazine; they proved very useful.

The men were greatly exposed to the enemy's fire and to the weather, the tents were originally cut up to make sandbags for defence, and for some time the troops slept in the open; as soon as possible temporary shelter made of horse blankets and tarpaulins was provided. We capitulated from want of provisions on the 23rd March, and were subsequently well treated by the Boers, who supplied us with necessaries. We crossed the Vaal River and marched through the Orange Free State; by the time we reached Ladysmith the sick were mostly convalescent.

Considering that 305 persons, including women and children, were shut up in a fort 25 yards square without cover, and exposed day and night to a harassing fire, with scanty supplies and a very limited amount of water, it is marvellous that the health of the garrison was so good. I attribute it to the unremitting attention paid to sanitary matters and the cheerful co-operation of all hands in carrying them out. I received the greatest assistance from Corporal Stanley and Privates Lukey, Burrowes, and Wadley, Army Hospital Corps, all of whom were more or less disabled by wounds and disease. Dr. Sketchley, a refugee in the fort, also rendered me valuable assistance.

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APPENDIX No. V.

MEDICAL REPORT ON THE SIEGE OF FORT MARY, LYDENBURG COMMENCING ON 6TH JANUARY AND ENDING 31ST MARCH 1881.

By Surgeon JOHN J. FALVEY, A.M.D.

The Head-quarters of the 94th Regiment and two companies, with Staff and Departmental details, left on the 5th of December for Pretoria, leaving behind a garrison here as follows:—

	Officers.	Non-commissioned Officers.	Privates.	Total Non-commissioned Officers and Men.
Royal Engineers	—	1	7	8
94th Regiment	1	4	50	54
Army Service Corps	1	3	1	4
Army Hospital Corps	1	1	3	4
Total	3	9	61	70

We had an additional strength of 9 volunteers from the town and gold fields. Immediately before the troops left I was verbally told by Colonel Anstruther that the hospital should be removed to camp, it being up to this time situated about 400 yards to the north-west of the huts, and consisted of a hospital marquee and tents. I immediately complied with that order, and took over a hut at the north end as being most suitable, and one in all respects well adapted for a hospital. I had the pharmacy and store room with all my surgical appliances in the same building, but screened off with a tarpaulin; this space was to form the operation room as well.

The barracks consisted of eight barrack huts, each 50 feet long by 18 feet wide, built in two rows of four each, parallel to and opposite each other, having a centre space between the inner walls 30 feet wide and about 78 yards long, forming a sort of barrack square.

The huts were connected by a stone wall. At a distance of nine feet from the outer walls was built a parapet on the north, south, and east sides 4½ feet high, and outside this a V-shaped trench was continued 6 feet wide and 3 feet deep on all sides, with the exception of the north end, where we did not have time to finish it.

The barracks were in a healthy situation, much higher than the town, and on ground sloping to the west and south; the river being 250 yards distant in the latter direction. A trench to form a drain 2½ feet wide and 3 feet deep was dug in the centre of the fort and continued out through the south end, and carried beyond it for about 14 feet. A well was first begun to be sunk on the 1st January and at the commencement of hostilities its depth was only 10 feet, but owing to the heavy rains for some time previous it was difficult to work, owing to the large quantity of surface water flowing into it.

We had a good supply of provisions including 48 days' fresh potatoes; also medical comforts, with beer and stout.

I was fortunately able to procure, by local purchase, bandages, chloroform, and a few other necessaries in anticipation of a long siege.

At 11.30 a.m. on the 5th January the attack on our position commenced by the insurgents (numbering between 500 and 600) pouring in a volley; they seemed to concentrate their fire for the first few hours on the hospital; though the Geneva flag was conspicuously flying over it, and simply riddled it with bullets through the thatched roof, breaking medicine bottles, &c., &c.

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whether this act was on their part intentional or unavoidable, I am not prepared to say. I would also mention that during this day, and on many occasions after, explosive bullets were fired by them, some of a very large size and discharged from elephant guns.

Immediately after we were shut in scrupulous care was paid to the sanitary arrangements of the fort. I had a tent pitched as a latrine, with the upper part cut away so as to give plenty of ventilation, and by means of an iron hoop tied on the top inside it was kept open, and fixed to the tent pole. Three seats with buckets underneath were in use, as well as four urine tubs. Cupralum and lime were used as disinfectants while they lasted; earth was shovelled into the tubs at intervals during the day. A special hospital latrine of similar construction was placed close to the hospital. Two urine tubs were placed for the use of the men at their posts at each side of the fort—principally for night use.

As every man had to sleep at his post I had their beds raised off the ground on boards, and in the case of those whose posts were not within the huts, shelters were made for them to sleep under and to protect from heat and rain.

All washing was done in the south end over the main drain close to the wall, and it was flushed with water regularly when such was available.

A field kitchen was in use during the whole siege; it answered all requirements as there was very little cooking to be done beyond making tea and coffee, and the occasional heating of the preserved meat with biscuit and rice, which the men did themselves.

The rations served out on the whole was abundant during the greater part of the time, and even when reductions had to be made towards the latter part of the siege, no appreciable change was noticed in the health of the troops. The reduced scale of rations as shown on March 6th appeared to me to be nevertheless a very nutritious one, and amply sufficient in every way.

A large quantity of the biscuit was mouldy and weevil eaten and unfit for issue, but that contained in the tin-lined cases was of excellent quality and in good condition. Twenty-five per cent. at least of the preserved meat was bad, caused by holes in the tins from the driving of nails into the packing cases. The Chicago brand was the one most liked; the meat seemed of a better quality, and better put up altogether, and was certainly the most palatable and sought after.

Rock cocoa (Epps') was invaluable, being so easily prepared and such a refreshing beverage; no part of the grocery ration pleased the troops so much. The increase and decrease of rations made by the officer commanding the troops himself from time to time was as follows :—

Alterations in the Scale of Rations.

January.

Field ration on 5th instant, from Garrison ration.

Evening ration commenced 1st January, discontinued 17th January - - - - - - { $\frac{1}{3}$ oz. cocoa. $\frac{1}{2}$ oz. sugar. $\frac{1}{4}$ lb. bread stuff.

$\frac{1}{4}$ lb. bread stuff issued with early morning rations commenced on 1st January, discontinued on 17th January.

$\frac{1}{2}$ lb. flour issued in addition to $\frac{3}{4}$ lb. biscuit "part field ration," commenced 18th January, discontinued 19th February.

February 13th. Increase of rations.

From $\frac{1}{3}$ oz. cocoa to 1 oz. grocery ration - - - { 2 oz. sugar. 1 oz. cocoa. $\frac{1}{2}$ oz. salt. $\frac{1}{36}$ oz. pepper. $\frac{1}{6}$ oz. tea.

From $\frac{1}{3}$ oz. cocoa to 1 oz. early morning ration - - { 1 oz. cocoa. $\frac{1}{2}$ oz. sugar.

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Decrease of rations. *February 18th.*

1 lb. Boer meal. No decrease.
¾ lb. preserved meat.
1 oz. cocoa, ⅓ oz. early morning ration, ½ oz. grocery ration.

March 6th.

½ lb. preserved meat. Decrease ¼ lb.
1 oz. sugar. Decrease 1 oz.
1½ lb. Boer meal. Increase ¼ lb.

March 25th.

From 1 oz. cocoa to ½ oz.
From 1¼ lb. Boer meal to 1¼ lb.

We captured two fat calves on the 15th January, and on the 16th and 17th had an issue of fresh veal which was thoroughly enjoyed.

The water supply was latterly entirely derived from a deep well having a diameter of 3 feet 9 inches. Rain water was also collected for washing purposes and stored in barrels, it was subsequently kept in a drive 30 feet deep, which was made with a view to find water when our well was running dry.

The ground in which the well was sunk consisted of blue slate running in strata, covered over by about 4½ feet of brown sandy soil.

We experienced great labour in cutting through this slate having no proper implements.

From 6th January (day of attack) up to 26th of same month we were entirely dependent for our water supply on a 10 feet shallow well, and during this time it was purely surface water we were using. For the first few days it was muddy but very agreeable to drink. Not having had any means of analysing it I am unable to give any report on its purity, but its physical characters were those of good and wholesome drinking water, and it was almost entirely free from hardness. On 26th January I first noticed the supply to be running alarmingly short; this was brought about by the Boers cutting off from the main river the spruits that ran in close proximity to the camp, (thereby depriving us of a large amount constantly percolating through the soil,) as well as from an unusual absence of rain since the beginning of the siege. Steps were immediately taken to deepen the well, and also to commence a new one of a somewhat larger size in the north end of the fort where we hoped to strike a spring.

Water for washing purposes was stopped this day. On the 27th well sinking was continued all day, in the evening we had got down 25 feet with very little increase in the amount of water. On the 28th I found only 5½ inches in the well, on 29th the water still left was carefully baled out into a cask for issue; sinking continued, no signs of a spring; quantity decreasing so much that on the 31st 3 pints only were available for issue to each man for all purposes. On the 1st of February we attained a depth of 30 feet but with no better results as on this and the following day we were unable to issue any more than the same quantity; by measurement the well made only 15 gallons during the whole night. February 3rd there was only one pint available for each man. I recommended the issue of a small bottle of ale per man, to be given in the afternoon; this was immediately sanctioned by the officer commanding troops as there was a good supply in the commissariat store. On the 4th we attained a depth of 40 feet, but with very little success, as only 15 gallons collected during the night; 1 pint per man could only again be issued; also a small bottle of beer. Twenty gallons were collected on the 5th and 2 pints per man were issued. On the 6th we had a shower of rain which lasted about half an hour, it was light, but sufficient to give each man a good drink, as well as a reserve of a few pints. On the 7th we had an increase from 14 gallons previous day to 28 gallons that day, no doubt caused by the rain: 2 pints were issued. 8th February, depth of well 45 feet; 23 gallons collected; it gave an issue of 2 pints; this afternoon rain came down heavily to our intense delight and not a moment too soon. For the remainder of the siege we had abundance of water.

It will thus be observed that the men were for 14 days short of water, during which time their sufferings were very great, and in some cases most painful to

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witness, but not in a solitary instance did I know one of them to lose his pluck or determination to weather it out; it really made me proud to be in the midst of such gallant fellows, who notwithstanding every privation were thoroughly unanimous in the belief that the united strength of the Boers could never take the fort.

After the seventh day of the water scarcity it was seen that it had already had a most telling effect on the men, they became weak and unable to bear prolonged fatigue; they lost appetite, and very often would not eat their tin meat ration or biscuit, fearing the increased thirst that followed. They had a pale and worn out expression, with sunken eyes and aspect of general debility. It was unfortunate that during all this time heavy work had to be done, strengthening and repairing the fortifications, which were much knocked about by the enemy's guns. I had the men relieved as much as possible during the heat of the day, and when practicable advised such rest for them as could be given.

The water privation was also equally felt by the patients in hospital, who did not have a hundredth part necessary for the dressing of their wounds; some days we were even unable to make a poultice, and for the last 10 days of the scarcity not one of the hospital staff or myself could even wash our fingers after our hospital duties. The few issues of beer to the men were very little cared for in comparison with water; all seemed to think it did not allay thirst in the least, on the contrary, they thought it rather increased it, several of them I know would freely have exchanged the beer for an equivalent amount of water.

The men's clothing, for the latter part of the siege, became much worn; trowsers were made out of barrack sheets for them, which answered very well, being easily washed and suitable for working in.

The hospital accommodation was quite sufficient in every way; there was no overcrowding; the hut already alluded to was well ventilated, and the patients were most comfortable. But owing to the heavy cannonade kept up on it from the beginning it became so unsafe that I had to remove the patients under a very heavy fire to another hut in the south end of the fort. The damage done to the first hospital hut was ultimately so great that on the 2nd March it completely collapsed, fortunately causing no loss of life. On the 12th March I had again to change the position of the hospital to a more central part of the fort; this was owing to the heavy musketry and cannon fire continually poured into it from a position only 180 yards off.

From the 4th to the 16th March the second hospital hut remained the only thatched building in the fort, the other thatches having had to be removed owing to the enemy setting some of them on fire with rockets; but from the deliberate way they fired cannon shots into the hospital we feared its thatch would also be set on fire, and as a precautionary measure were obliged to remove it. We then constructed, a hospital along each wall in the inside of the hut, by shelters of tarpaulins supported on poles and leaving a central passage; this was perfectly waterproof, and at night, when cold, the folding covers thus made were let down to keep the patients warm.

The above-mentioned frequent removal of the patients was unfortunate, particularly in one case of chest wound, in which pleuritis was set up ending in empyæma.

The general health of the men during this trying time was excellent. For the first two days of the attack, owing to the incompleteness of the shelter trench and the heavy fire of the enemy, we were unable to empty the latrine tubs and they were left at the south end of the fort, to be removed at first opportunity. The consequence was that three men posted at this end near the tubs were admitted for simple continued fever, one on the 11th January, one on the 12th and the other on 13th, and one of the cases proved fatal from acute congestion of the lungs. The tubs after this were disinfected and covered, and every precaution taken to prevent insanitary conditions. I believe had it not been for the unavoidable delay in removing these tubs, there would not have been a single admission under continued fever.

We had no canteen open, but rum was issued to fatigue parties engaged in well sinking and other heavy work. A ration of it was also served to the troops when inclement weather prevailed, or when they were otherwise unusually exposed, or had to repel a lengthened attack of the enemy; I strongly approved of the issue, and had ample opportunities of watching its invigorating effects.

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LIST of NON-COMMISSIONED OFFICERS and MEN who were wounded in Action during the Siege of Fort Mary, Lydenburg, from 6th January to 31st March 1881.

Corps.	Regimental No.	Rank and Name.	Nature and Position of Wound.	Date of being wounded.	Remarks.
				1881.	
94th	2,461	Private Meah, F. -	Left eyebrow, slight	6th Jan. -	Duty.
A.H.C.	2,738	Lance-Sergeant Allen, T.	Upper lip, slight -	7th „ -	„
A.H.C.	3,575	Private Harlow, F. -	Right shoulder; flesh wound.	7th „ -	„
94th	569	„ McKinney, S.	(1.) Left side and chest.	7th „ -	„
			(2.) Left side and chest, in front of heart.	12th „ -	„
94th	1,021	„ McKeown, F.	Forehead - -	7th „ -	„
94th	525	Drummer Keogh, A. -	Buttock; right side, deep and severe.	7th „ -	Hospital.
94th	384	Private McArdle, D. -	Right ear and side of head, deep and severe.	8th „ -	„
55th	5	„ O'Brien, J. -	Right side of head, slight.	8th „ -	Duty.
94th	814	„ Croxford, A. -	Penetrating right shoulder, gunshot wound.	11th „ -	Severe. Still in hospital; doing well.
94th	2,332	„ Walker, T. -	Back of right ear, slight.	12th „ -	Duty.
94th	294	„ Robinson, J. W.	Chest, slight -	12th „ -	„
94th	2,224	Lance-Corporal Hattrall, T.	Perforation, abdomen.	19th „ -	[Died.] 20th Jan. 1881.
94th	266	Sergeant Cowdy, J. L.	Gunshot wound and head perforated.	22nd „ -	[Died.] 22nd Jan. 1881.
R.E.	10,037	„ Day, T. -	Left shin, slight -	24th „ -	Duty.
94th	2,130	Private Cahill, T. -	Penetrating wound, left breast and right arm.	24th „ -	Severe. Hospital; doing well.
R.E.	13,731	Sapper Hookey, E. -	Perforating left tarsus, severe.	2nd Feb. -	Hospital; doing well.
94th	1,563	Corporal Hissey, R. -	Lacerated wound; back of head.	8th „ -	Severe. Hospital; doing well.
94th	832	Private Greenwood, E.	Perforating wound of chest, left side.	19th „ -	Dangerous; doing well.
A.H.C.	3,801	„ Bryant, W. -	Left eye, slight -	1st Mar. -	Duty.
94th	1,661	„ Cheeseman, C.	Right shoulder joint.	4th „ -	Severe. Hospital.
55th	8	„ Stewart, J. -	Perforation of skull	4th „ -	[Died.] 4th Mar. 1881.

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APPENDIX No. VI.

REPORT ON THE ACTION AT AMAJUBA HILL.

By Surgeon Major THOMAS BABINGTON, A.M.D.

No. I.—From Deputy Surgeon General J. HOLLOWAY, C.B., to the DIRECTOR GENERAL, A.M.D.

Pietermaritzburg, Natal, 20th March, 1881.

I HAVE the honour to forward herewith a copy of a report by Surgeon Major T. Babington, Senior Medical Officer, Natal Field Force, on the medical arrangements at and after the battle of Amajuba Hill.

The arduous and ably conducted duties of the above-named officer and the medical officers and Army Hospital Corps which were engaged in this action require no comment from me.

In all three rapidly succeeding actions, namely, Laing's Nek, Ingogo, and Amajuba Hill, the indefatigable labours of the medical officers of the Natal Field Force, Surgeon Major T. Babington, Senior Medical Officer, Surgeons, J. Ring, J. McGann, A. J. Landon, and Surgeon E. E. Mahon, R.N., to which in the last action the name of the late Surgeon Major H. Cornish must be added, left nothing undone that devotion to duty could supply. It will be seen that nearly the last thought of that keen and able young officer, Surgeon Landon was to record the meritorious conduct of No. 4,030 Provisional Lance-Corporal J. Farmer, and No. 3771 Private George Sealey, Army Hospital Corps.

Surgeon J. Ring remained two nights on Amajuba Hill without shelter of any kind.

Of the five surgeons with the Force (four Military and one Naval) two have succumbed to wounds received in action. I beg strongly to recommend the survivors to your favourable consideration.

No. II.—From Surgeon Major THOMAS BABINGTON, to Deputy Surgeon General HOLLOWAY, C.B.

Mount Prospect, 5th March, 1881.

I HAVE the honour to report for your information the following account of an engagement which took place between a part of the Natal Field Force and the Boer Army on the 27th ultimo :—

The Major General Commanding left camp the previous night with the following troops, viz. :—2 Companies 3/60th Rifles, 2 Companies 58th Regiment, 3 Companies 92nd Highlanders, and a part of the Naval Brigade, numbering in all 25 officers and 403 non-commissioned officers and men.

His object was to take at night by surprise the Amajuba Mountain, which entirely commands the strong position of Laing's Nek. The force gained the top of the mountain without molestation, but I regret to say it was retaken by the Boers after 7 hours more or less continuous fighting.

The casualties were again large, representing 3 officers and 83 non-commissioned officers and men killed, and 10 officers and 130 non-commissioned officers and men wounded.

There were besides 7 officers and 50 non-commissioned officers and men taken prisoners.

I only got warning at 9 o'clock p.m. through Lieut.-Colonel H. Stewart, Chief of the Staff, that the force was about to start, and I had only half an hour to make my arrangements. I immediately warned Surgeon A. J. Landon, A.M.D., and Surgeon E. E. Mahon, R.N., to proceed with the force, and sent

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with them a pack horse containing all surgical necessaries and stimulants. They had also with them 7 stretchers carried by a sufficient number of bearers, and a non-commissioned officer and 3 men of the Army Hospital Corps. At one o'clock a.m. the same night 2 Companies of the 3/60 Rifles, numbering 75 men and 3 officers started to garrison an intermediate post between the camp and the top of the Amajuba. With these Companies I sent Surgeon Major H. Cornish, A.M.D., a pack horse and 2 pack mules loaded with a large supply of surgical necessaries and supplies of various sorts, 4 stretchers, a sufficient number of bearers and the hospital sergeants, an hospital orderly 92nd Highlanders, and Private Lowe Army Hospital Corps.

I think you will consider that an ample number of medical officers, Army Hospital Corps and other men and supplies, &c., were sent for so small a force.

Firing commenced at 6 o'clock a.m., and shortly afterwards ceased nearly altogether until about 12 noon, when it became fast and furious. I then sent out Surgeon Ring, A.M.D., with all the ambulances in camp, nearly all the remaining non-commissioned officers and men of the Army Hospital corps and everything which could by any possibility be wanted, with orders to him to go as far as he could up the mountain and there form a dressing station.

He went on until he came under fire and the horse of the conductor of the ambulances was wounded. He was able to afford assistance to many wounded, but as I knew the majority of those hurt were on or near the top of the mountain, and as I heard rumours that the medical officers who went out the previous night were amongst the wounded, I decided to leave camp and go up myself. I accordingly started with a flag of truce between 3 and 4 o'clock p.m., met the Boer General Smit, who gave me ample powers and promised every security to all employed with me. Surgeon Ring and I searched the field for wounded until nightfall and had them conveyed to O'Niel's farm at the foot of the mountain, where I had organised a temporary Field Hospital.

It was at this time we unhappily found Surgeon Major Cornish lying, fatally wounded through the left lung, on the slope of the hill. He was conveyed on a stretcher to the farmhouse and made as comfortable as was possible in his condition. At dark I started with Surgeon Ring and a stretcher party of 100 men carrying stretchers, blankets, water-proof sheets, wine, and brandy, &c. to ascend the mountain to bring down the numerous wounded we knew to be there. It was one of the worst nights I ever experienced. A dense fog prevailed and it was raining and blowing heavily, and as dark as pitch. We got, as we afterwards found out, near to the top of the mountain, and then entirely lost our way. The fog concealed everything around us, and was so thick that the lanterns were of no use. We were then obliged to halt until daybreak in spite of the anxiety of every one to proceed further.

At the first glimmer of day we again started on our search and with great difficulty, owing to the fog still continuing, found the top spur of the mountain, and came across the wounded, all under the care of Surgeon Mahon, R.N., who was fortunately unhurt.

I found there Commander Francis Romilly, R.N., shot through the abdomen, and Surgeon Landon, A.M.D., wounded through the right lung. As many of the wounded as we had men to carry were at once sent down to the farmhouse over ground so difficult that it took until evening to carry them down. Every one worked hard and all were got down except four, who were yet to remain another night on the top of the hill in charge of Surgeon Ring. In the evening I made my way down to the farm and managed to bring into camp before nightfall nearly all the wounded lying there, and then returned to camp myself, where I knew I was urgently required. The next morning the four remaining wounded were got down to the farmhouse, and as then the total number there was 24 I placed Surgeon Gormley, A.M.D., in charge of them, supplying him with all he required for their comfort and treatment. As they were very comfortable in the farmhouse, I proposed leaving them there for a few days as the camp hospital was greatly crowded and the weather most severe.

On the morning of the 3rd instant 2 officers and 49 men were transferred to Newcastle, which gave me plenty of room in the Field Hospital, and I may say the crowded condition only lasted for a few hours as I got plenty of extra tents pitched and then had ample room,

Lance-Corporal Farmer and Private Sealey, Army Hospital Corps, were dangerously wounded while on the top of the hill in the performance of their

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duty, and Surgeon Landon informed me before he died that they performed their work during the whole day coolly and well.

Surgeon Mahon, R.N., behaved as well as any officer could do, and I feel sure only for the deaths of Sir G. Pomeroy Colley, and Commander F. Romilly, R.N., that he would have been specially mentioned.

I shall write later on further particulars concerning the deaths of the two medical officers.

No. III.

March 13th.

AT 6 o'clock in the evening of the 27th February a temporary hospital was established at O'Niel's farmhouse which is situated at the foot of the Amajuba Mountain where the action took place. The farmhouse is distant three or four miles from our camp.

All the wounded except 24 had, by the evening of the 28th idem, been conveyed into the Field Hospital in camp, and early in the morning of the 1st March, I placed Surgeon Gormley, A.M.D., in charge of these 24, intending only to leave them in the farmhouse for one day and then bring them into camp. The weather however turned out so very bad that I did not consider it advisable or for the patients comfort to remove them before the 8th instant.

The house consisted of 3 rooms and a kitchen, and there was besides a good outhouse which was fit to accommodate 7 patients.

The accommodation was sufficient for the number, but for no more.

Surgeon Major H. Cornish, A.M.D., and No. 1968 Private Graham, 92nd Highlanders, died there on the 1st instant, No. 1112 Private McIvon, 58th, on the 2nd inst., and on the 6th inst., No. 540 Private J. Stewart, 92nd Highlanders.

Private Graham suffered from a perforating wound of abdomen, and Surgeon Major Cornish and Privates McIvon and Stewart from perforating wounds of the chest.

I supplied the farmhouse with ample stores of all description, including panniers and surgical materials.

Corporal Douglas, Army Hospital Corps, was the non-commissioned officer in charge, and he had assisting him Privates Callard, Lane, and Wallace, Army Hospital Corps, Lance-Corporal Brooker, Privates Chapple and Salter, 3/60th Rifles, and Private Smith 58th Regiment.

On the morning of the 8th instant I had all the patients and stores, &c., brought into the Field Hospital in camp, and the farmhouse hospital closed.

No. IV.

March 11th.

I HAVE the honour to send you the following particulars concerning the deaths of Surgeon Major H. Cornish and Surgeon A. J. Landon, A.M.D., and the wounds of Provisional Lance-Corporal Farmer and Private Sealey, Army Hospital Corps.

(4.) Surgeon Major Cornish was having conveyed down the hill on a stretcher Private J. Archer, 92nd Highlanders, who was severely wounded in the groin, and Piper Cooper, 92nd Highlanders, who was passing at the time, was hailed by Surgeon Major Cornish and asked to assist in carrying the stretcher. He states, as soon as he came up, the two men who were then bearing the stretcher went away and left him and Surgeon Major Cornish alone with the wounded man. Surgeon Major Cornish and Piper Cooper carried the stretcher for a short distance, and then sat down to rest, one at each end of the stretcher. Surgeon Major Cornish took out a white handkerchief and waved it to the Boers who were near at hand and called out "wounded men." The Boers called out "who are you?" and he answered loudly "wounded men." At that moment he was shot, and rolled 8 or 10 yards down the hill. Piper Cooper said to him "Doctor, are you badly wounded?" and he replied faintly "I am a dead man, I will not be a doctor long." I have gathered this account from the statements of Private Archer and Piper Cooper. Piper Cooper remained with him.

About 5 o'clock p.m. Surgeon Ring, A.M.D., and I found Surgeon-Major Cornish lying on the ground on his side, and after examination of the wound

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saw there was little or no hope of his recovery. The ball entered the back and perforated the left lung, making its exit above the left nipple. The wound of exit was large. We dressed the wound on the field, and had him conveyed to O'Niel's farm at the foot of the mountain, where a temporary hospital was organized. He rallied somewhat the next day, but the change was deceptive. He died about 10 o'clock in the morning of the 1st March. It was not considered advisable to move him from the farmhouse, Surgeon Gormley, A.M.D., was with him to the last.

(2.) Surgeon A. J. Landon, A.M.D., left with the force at 9.30 p.m. on the night of the 26th February, and from the time that the action commenced the next morning, until hit, was busily engaged in the performance of his duties. When the Boers made the final charge and took the ridge, Surgeon Landon was engaged in dressing a group of wounded, and had with him as assistants Lance-Corporal Farmer, and Privates Sealey and Frost, Army Hospital Corps. The bullets came raining amongst the little group, and for the men's protection he ordered all to lie down. It was at this time he was shot. The bullet entered the left side of the back close to the spine, passed obliquely through the left lung, and became spent under the skin a little below the axilla, whence it was cut out by Surgeon Mahon, R.N. Private Frost states that when hit he said, "I am dying, do what you can for the wounded." "I cannot assist you." He also said "Let my friends know I was doing my duty "when shot." His wounds were dressed, and he was made as comfortable as possible with blankets and waterproof sheets. The next morning at 7 o'clock he was conveyed down the hill on a stretcher to his tent in camp. I was with him when he died. From the direction the bullet took I felt convinced he could not live. He died at 2.30 a.m. the 1st March. He told me he knew there was no chance for his life, and that I was to tell his friends that he fell doing his duty.

These two officers were mortally wounded when fearlessly doing their duty.

(3.) Lance-Corporal Farmer, Army Hospital Corps, was first shot in the right forearm when holding up a white triangular bandage as a flag of truce. He then took the flag in his left hand, and was shot through the left arm close to the elbow joint. It is said he afterwards tried to assist in finding the wounded lower down the hill, although both arms were rendered useless and in splints.

(4.) Private Sealey, Army Hospital Corps, was at the same time wounded in both shoulders. Fortunately, the wounds, although severe, have not fractured the humeri, and it is hoped the joints are not implicated.

(5.) Surgeon E. E. Mahon, R.A., desires to bring to your notice the good conduct of No. 3704 Private R. Wallace, Army Hospital Corps, who assisted him gallantly in dressing the wounded during the hottest period of the fight. Private Frost also behaved well as did also all the non-commissioned officers and men of the Army Hospital Corps who accompanied Surgeon Ring and myself to search the field for the wounded.

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APPENDIX No. VII.

RETURNS SHOWING THE RESULT OF CAPITAL OPERATIONS, PERFORMED AT NEWCASTLE AND THE FRONT, DURING THE ACTIONS AGAINST THE BOERS AT LAING'S NEK.

(Deputy Surgeon General Holloway, C.B., having been struck with the excellent surgical measures taken with the wounded in the hospitals at Newcastle and the Front, in the actions around Laing's Nek, called for a return showing the names of the medical officers who had so skilfully operated. It will be seen that of 18 capital operations in the Field Hospital, Prospect, 7 proved fatal; and of 32 in the Base Hospital, Newcastle, 3 were fatal. When the exceedingly grave character of the injuries in most of the cases is considered, the amount of success, following amputations chiefly, is most satisfactory.)

Operator.	Capital Operations.	Successful.	Fatal.	Result still doubtful.
	Field Hospital.			
Surgeon-Major T. Babington -	16	11	5	—
„ J. A. Gormley -	1	—	1	—
„ A. J. Landon - -	1	—	1	—
	Base Hospital.			
„ A. H. Stokes - -	1	1	—	—
„ R. Drury - -	3	3	—	—
„ E. C. R. Ward -	1	1	—	—
„ D. B. Brown - -	19	16	2	1
„ R. Smith - -	6	5	1	—
„ J. McGann - -	2	2	—	—
Total - - -	50	39	10	1

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LIST of OPERATIONS performed in the BASE HOSPITAL, NEWCASTLE, since Commencement of Hostilities.

Officers.

No.	Rank and Name.		Regiment or Corps.	Nature of Injury.	Nature of Operation.	Date of Operation.	Name of Medical Officer who operated.	Result.
1	Lieutenant	Hill, A. R. - -	58th Regiment	Gunshot penetrating wound of right elbow, with smashing of ulnar shaft.	Excision of elbow joint and removal of smashed portion of ulna.	1881, 29 March -	Surgeon D. B. Brown	Successful.
2	„	Hamilton, J. P. -	92nd Regiment	Gunshot penetrating wound of left wrist, and smashing of radial shaft.	Excision of wrist joint and broken radial portion.	3 April -	Surgeon D. B. Brown	Successful.
3	Captain -	Lovegrove, E. L. -	58th Regiment	Gunshot wound of arm, with extensive shattering of upper end of humerus.	Amputation at shoulder joint by deltoid flaps antiseptically.	14 May -	Surgeon R. Smith -	Successful.

Base Hospital, Newcastle,
19th July 1881.

(Signed) J. WATTS,
Brigade Surgeon in Charge.

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List of Operations performed in the Base Hospital, Newcastle, since Commencement of Hostilities.

Non-Commissioned Officers and Men.

No.	Regimental No.	Rank and Name.	Regiment or Corps.	Nature of Injury.	Nature of Operation.	Date of Operation.	Name of Medical Officer who operated.	Result.
						1881.		
1	756	Private Bury, J.	3/60th Rifles	Gunshot wound of forearm, received at Ingogo on 8th February 1881. Bullet shattered bones of forearm.	Amputation of forearm	10th Feb.	Surg.-Maj. A. H. Stokes	Successful.
2	2,911	„ Lyons, T.	„	Gunshot wound of forearm, at Ingogo on 8th February 1881. Bullet shattered bones of forearm.	Amputation of forearm	11th „	Surgeon J. McGann	„
3	3,508	„ Harris, C.	„	Gunshot wound of forearm, received at Ingogo on 8th February 1881. Bullet shattered humerus above elbow joint.	Amputation of arm	12th „	„ „	„
4	1,011	„ Band, W.	„	Gunshot wound, right elbow joint and forearm, opening the vessels, and subsequent formation of traumatic aneurism.	Amputation of arm above elbow joint by circular method.	20th Mar.	„ R. Drury	„
5	3,472	„ Brett, H.	„	Penetrating gunshot injury of knee.	Amputation of lower third of thigh.	23rd „	„ D. B. Brown	„
6	4,454	Lance-Corporal Eady, J.	„	Penetrating gunshot injuries of shoulder and elbow joint of left arm.	Amputation at the shoulder joint.	28th „	„ „	„
7	824	Corporal Horton, R.	„	Shattered humerus high up bone.	Amputation at the shoulder joint.	30th „	„ „	„
8	2,101	Lance-Corporal Clarke, W.	1st R. D. Gds.	Penetrating gunshot wound, left elbow.	Excision of the elbow joint	1st April	„ „	„
9	2,103	Private Wiseman, G.	3/60th Rifles	Gunshot wound through ankle joint.	Amputation at ankle (Symes)	14th „	„ Ward	„
10	1,135	„ Treswell, A.	58th Regiment	Penetrating wound, and subsequent caries of os calsis.	Excision of os calsis	16th „	„ D. B. Brown	See case No. 15.
11	1,911	„ Deacon, S.	„	Gunshot wound of right thigh; fearful emaciation.	Amputation at upper third of thigh.	21st „	„ „	[*Died.*] 25th April 1881. (Exhaustion.)

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List of Operations (Non-Commissioned Officers and Men)—*continued.*

No.	Regimental No.	Rank and Name.	Regiment or Corps.	Nature of Injury.	Nature of Operation.	Date of Operation.	Name of Medical Officer who operated.	Result.
						1881.		
12	1,760	Private Clarke, E. -	58th Regiment	Gunshot injury of right clavicle and glenoid cavity, afterwards periostitis and its results to humerus.	Amputation at shoulder of arm, excising half of clavicle and most of glenoid cavity.	28th April -	Surgeon D. B. Brown -	Successful.
13	—	Signalman Hobbs, C. -	Naval Brigade	Gunshot shattering of leg -	Amputation below knee at "seat of election."	25th „ -	„ „ -	„
14	1,952	Private Guietau, E. -	94th Regiment	Gunshot penetrating wound of right elbow.	Excision of elbow joint -	2nd May -	„ „ -	„
15	1,135	„ Treswell, A, -	58th „ -	Being partially paralysed through effects of penetrating wound through abdomen, suppuration took place in excised locality. (See No. 10 case.)	Amputation of leg above ankle	3rd „ -	„ „ -	[*Died*] 28th May 1881. (Septicæmia.)
16	1,231	Gunner Hallaghil, J. -	U/5 R. A. -	Gunshot wound of upper third of thigh: lower fragment drawn up against the pelvis.	Amputation through upper third of thigh.	6th „ -	„ R. Smith -	See case No. 22.
17	330	Private Collison, H. -	58th Regiment	Gunshot penetrating wound of left elbow. Fracture of ulna about its middle.	Excision of elbow joint -	7th „ -	„ D. B. Brown -	Successful.
18	2,136	„ Simmonds, H. -	94th „ -	Gunshot injury to left shoulder, with lodgement of bullet.	Excised shoulder joint and removed bullet.	7th „ -	„ „ -	Successful until erysipelas attacked it. See case No. 25.
19	1,689	„ Hedge, W. -	58th „ -	Gunshot wound through shoulder joint, subsequent periostitis attacking shaft of humerus.	Amputation of arm at shoulder and removal of all injured bone.	8th „ -	„ „ -	Successful.
20	1,202	„ Reefe, P. -	58th „ -	Gunshot wound through os calcis involving the ankle joint, followed by abscesses in leg and thigh.	Amputation above ankle joint. Antiseptic method.	14th „ -	„ R. Smith -	„
21	1,654	„ Hurst, J. -	58th „ -	Gunshot wound of left thigh, with splintering of the femur, &c., received at Laing's Nek, 28th July 1881.	Amputation at junction of middle and upper third of thigh by lateral flaps.	16th „ -	„ R. Drury -	„

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List of Operations (Non-Commissioned Officers and Men)—*continued.*

No.	Regimental No.	Rank and Name.	Regiment or Corps.	Nature of Injury.	Nature of Operation.	Date of Operation.	Name of Medical Officer who operated.	Result.
						1881.		
22	1,231	Gunner Hallaghil. J.	N/5 R. A.	Gangrene followed last operation, exposing the bone of the pelvis.	Amputation at hip joint	20th May	Surgeon R. Smith	[*Died.*] 20th May 1881. (Exhaustion.)
23	722	Private Lovelock, H.	3/60th Rifles	Gunshot wound of left thigh, with extensive shattering of femur.	Amputation in upper third thigh by anterior and posterior flaps.	26th „	„ R. Drury	Successful.
24	1,248	„ M'Swiggan, H.	94th Regiment	Gunshot wound of leg, through the tibia. Medullary abscess and periostitis followed.	Amputation below knee. Antiseptic method of after treatment.	27th „	„ R. Smith	„
25	1,689	„ Hedge, W.	58th „	(See case No. 19). Caries of acromial process, end of scapular spine and half of clavicle.	Excision of acromial and end of spine of scapula, with half of the clavicle.	11th June	„ D. B. Brown	„
26	—	„ Ross, J.	58th „	Gunshot penetration, subsequent caries of the spine of the scapula.	Excision of the whole spine of scapula.	5th „	„ „	„
27	—	„ Clapham	58th „	Gunshot wound in upper third of thigh, followed by abscess of bone and hectic.	Amputation through upper third of thigh bone, removed just below trochantar. Antiseptic operation.	7th „	„ R. Smith	„
28	2,136	„ Simmonds, H.	94th „	Periostitis being set up along shaft of humerus, through erysipelas though a most serviceable arm had before resulted. (See case No. 17.)	Amputation at shoulder joint	25th „	„ D. B. Brown	„
29	—	„ Reed, J.	94th „	Gunshot smash of shaft of humerus, no attempt at osseous union successive fragment being removed.	Re-section of centre of shaft	27th „	„ „	Recently done.

Base Hospital, Newcastle,
19th July 1881.

(Signed) J. Watts,
Brigade Surgeon in Charge.

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RETURN of OPERATIONS performed at FIELD HOSPITAL, MOUNT PROSPECT, since 26th January 1881.

Corps.	Regimental No.	Rank and Name.	Nature of Injury.	Nature of Operation.	Name of Medical Officer who operated.	Result.	Remarks.
58th	136	Dr. Dalby, W.	Gunshot wound, face and side.	Left common carotid tied	Surgeon-Maj. Babington	Successful	After twice trying to stop the hæmorrhage by ligaturing the lingual. (Laing's Nek.)
„	2,336	Private Mahoney, P.	Gunshot wound, left hand	Amputation of the four fingers at the metacarpo pharangeal joints.	„ „	„	Wounded at Laing's Nek.
„	969	„ Pigrem, P.	Gunshot wound, left thigh and finger.	First finger amputated at the metacarpo pharangeal joint. Flesh wound of thigh.	„ „	„	„ „
„	2,102	„ Robinson, G.	Gunshot wound, left leg	Amputation of thigh in upper third.	„ „	„	Anterior tibial artery. Wounded at Laing's Nek. False aneurism formed.
„	32	„ McCracken, W.	Gunshot wound, left leg and foot.	Amputation of thigh, lower third	„ „	Fatal	Popliteal artery wounded, at Laing's Nek. Gangrene set in.
„	1,055	„ Taylor, F.	Gunshot wound, left foot	1st. Amputated above ankle 2nd. „ below knee 3rd. „ lower third of thigh	„ „	„	Wounded at Laing's Nek. On each occasion sloughing, with secondary hæmorrhage, set in.
„	1,873	„ Gaylor, J.	Gunshot wound, thigh	Amputation of thigh, upper third	Surgeon Landon	„	Wounded at Laing's Nek. Operated on very late, a large abscess having formed.
„	2,045	„ Monck, J.	Gunshot wound, arm	Amputated arm at shoulder joint	Surgeon-Maj. Babington	Successful	Wounded at Laing's Nek.
„	614	„ Watson, J.	Gunshot wound, left leg	Thigh amputated, lower third	„ „	„	„ „
„	1,852	„ Swaine, J.	Gunshot wound, left finger.	Third finger amputated at metacarpo pharangeal joint.	„ „	„	Shot himself accidentally while on patrol at Mount Prospect.
3/60th	3,570	„ Pocock, T.	Gunshot wound, right arm	Arm amputated, lower third	„ „	„	Wounded at Ingogo.

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The following Cases were operated on after 1st March 1881.

Corps.	Regimental No.	Rank and Name.	Nature of Injury.	Nature of Operation.	Name of Medical Officer who operated.	Result.	Remarks.
92nd	—	Major Singleton, L. C.	Gunshot wound, knee and leg.	Thigh amputated, lower third	Surgeon-Maj. Babington	Fatal	Wounded at Amajuba. Done as a last resource, irritative fever having worn him down.
58th	236	Corporal Murray, P.	Gunshot wound, shoulder and arm.	Arm amputated, upper third	Surgeon J. C. Gormley	„	Wounded at Amajuba. Operated on at O'Neil's Farm.
„	520	Lance-Corporal Carr, J.	Gunshot wound, wrist	Fore arm amputated in the upper third.	Surgeon-Maj. Babington	Successful	Wounded at Amajuba.
„	2,027	Private Howard C.	Gunshot wound, ankle	1st. Amputated leg above ankle 2nd. „ thigh about centre.	„ „	„	Wounded at Amajuba. Gangrene attacked the foot and afterwards the first stump, and also the flaps of the second stump of the thigh sloughed; but he recovered.
92nd	73	„ Campbell, W.	Gunshot wound, arm	Amputation through shoulder joint. Arm desperately shattered.	„ „	Fatal	Wounded at Amajuba.
„	1,483	„ McKenzie, K.	Gunshot wound, leg	Leg amputated below knee	„ „	„	„ „
„	895	„ Proudfoot, A.	Gunshot wound, knee	Thigh amputated, lower third	„ „	Successful	Wounded at Amajuba. Done very late, irritative fever having set in; but he recovered well and quickly.

23rd July 1881.

(Signed) ROBT. N. MALLY,
Surgeon-Major, S.M.O.

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APPENDIX No. VIII.

AN ACCOUNT OF THE ACTION AT BRONKHORST SPRUIT, WITH THE SUBSEQUENT CONDITION OF THE WOUNDED IN CAMP AT THAT STATION.

By Surgeon E. C. R. WARD, A.M.D.

Pietermaritzburg, 18th May 1881.

Having now returned from the Transvaal, I beg to submit an account of the action at Bronkhorst Spruit on the 20th December 1880, and of the subsequent occurrences during the time I remained in charge of the camp of wounded at that place, a prisoner in the hands of the Boers up to the 2nd April 1881.

The head-quarters and two companies of the 94th Regiment with Army Service Corp and Army Hospital Corps, strength as follows: 94th Regiment, officers 6, non-commissioned officers and men 246; Army Service Corps, officers 1, non-commissioned officers and men 6; Army Medical Department, officers 1; Army Hospital Corps, non-commissioned officers and men 4; 94th Regiment, women 3, children 2, total 269, were under command of Lieutenant-Colonel Anstruther, I being in medical charge, on the march from Lydenburg to Pretoria. On the day in question (20th December) at about 1 p.m., on coming to a place where the road dips down into a partially wooded country, the Boers suddenly appeared, mounted, in force on our left flank. We were not at the time anticipating any attack. The enemy immediately sent forward a man bearing a white flag, whom Colonel Anstruther went to meet, and with whom he had a brief conference of, perhaps, five minutes duration. During this time the Boers were improving their original position, taking up cover under the trees, our men being on the road in column awaiting the termination of the interview. On Colonel Anstruther returning towards his regiment and before he had quite regained it the enemy opened a most murderous fire at a range of about 250 yards all round. This was as hotly returned by our men (lying down). The absence of the slightest cover for our men, together with the better position of the Boers under shelter of the trees and on higher ground, and being, I believe, in greatly superior numbers, could not leave the result long doubtful, and at the end of about 15 minutes seven out of eight officers being killed or wounded, and about three fifths of the men down, the "cease fire" was ordered to be sounded.

On the termination of the fight, having spoken to Colonel Anstruther, who was dangerously wounded, I went forward to the Commandant of the Boers, and obtained from him permission to send a letter to Pretoria, informing Surgeon-Major Skeen, Senior Medical Officer, Transvaal, of the disaster, and applying for further surgical assistance. I was myself slightly wounded in the left thigh, and of four men, Army Hospital Corps, with me, one was slightly and one severely wounded. I also obtained permission from the Boer Commandant to take from the waggons what I required for the wounded, and he left with us about 20 or 30 unwounded men to bury the dead and assist the living, the remainder of our men, together with Captain and Paymaster Elliott, 94th Regiment (the only unwounded officer), the Boers took off immediately as prisoners. I directed some men to get tents and blankets off the waggons, as well as any provisions or stimulants they could lay their hands on, in the short time at their disposal. I had of course taken from the hospital waggon the medical and surgical appliances, &c., &c. The Boers then took away the whole of our waggons, including ambulance, also all horses not shot. The two messengers sent to Pretoria with the news (a distance of about 40 miles) had to go on foot. The Boers left us a water cart and two oxen, this I dispatched for water to the nearest stream about half a mile off, I then directed some men to pitch tents, and another party under an intelligent sergeant, 94th Regiment, and one man, Army Hospital Corps, to proceed back along the line

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of waggons towards the rear guard, which was about three quarters of a mile back, and bring in the wounded, who were lying scattered along the whole line. I myself set about attending to those on the spot where the column was (here, of course, the greatest number fell). This I was able to commence regularly about 2 p.m., and it was 6 a.m. the following morning when I had seen the last man, applying to each such dressing as was practicable, and performing such operations as could be done, under the circumstances, on the spot. I found when all were collected 56 killed and 100 wounded. The water cart was going all night backwards and forwards for water. The wounded lay seven and eight in each tent, with no bedding or covering other than the few blankets we pulled off the waggons.

On the morning of the 21st I directed one of the wounded oxen, numbers of which lay about, to be killed, and beef tea to be made; we had saved from the waggons some biscuits and groceries, and on the previous day had used extract of beef from the medical comfort box. The prompt burial of the dead was also necessary; this was accomplished with great difficulty owing to the small number of men at my disposal, and all having been incessantly at work since the battle.

On the 22nd at about 11 a.m. Surgeon-Major Comerford, Army Medical Department, with Civil Surgeon Crow, one sergeant, and five men, Army Hospital Corps, two ambulances, and one waggon with a good supply of medical and surgical materials, stimulants, medical comforts, &c., arrived from Pretoria in response to my note written immediately after the battle. We now proceeded with the performance of the most pressing of the capital operations. It was also necessary to shift the situation of the camp, the number of dead animals about making the place offensive. The vultures were also now on the scene of action by hundreds.

On the 23rd we succeeded in moving the tents and the wounded to a new site close to the water, a matter of no little difficulty with the transport at our disposal.

On the 26th we sent into Pretoria nine wounded.

On the 4th January, Surgeon Major Comerford returned to Pretoria, taking with him 10 wounded. After this date the Boers cut off all my communications with Pretoria, and on no pretext would they allow me to send in any message or get anything out, whether food, medicines, or other supplies. They kept us prisoners in camp, but did not provide food for us. I had authority from the Senior Commissariat Officer, Transvaal, to purchase supplies on account of the Government, there were, however, only two or three individuals who would give us anything on my receipt; one, a friendly farmer, supplied sheep and sometimes vegetables, and another, a shopkeeper, supplied meal and some groceries (both on receipt); the latter, however, lived 20 miles off, and I had great difficulty in communicating with him, as I had to obtain a pass from the Boers for the messenger, which they were for some time very reluctant to grant. On one occasion I had to go myself to Middleburg, a distance of 40 miles, to procure necessary supplies, and had to get a pass from the Boers while they sent a man with me as escort.

Milk, butter, and eggs I was able to purchase in the neighbourhood for ready money, though of these we sometimes got presents. I fortunately had a little money, and borrowed more from the shopkeeper above mentioned.

Peaches and apples we were well supplied with, generally without payment. Our bread we made on the spot, having built an oven for the purpose; one of the men acting as baker turned out very fair bread made from the Boer meal above mentioned.

It was very fortunate that there were trees close to our camp, from which parties of men went out daily to cut firewood; had it not been for this I do not know how we could have managed for fuel, as it is not uncommon to travel 100 miles in the Transvaal without seeing a tree, except immediately around a farmhouse, where, of course, cutting would not be allowed.

As some of the wounded gradually recovered I was able to get parties of men to go out daily to set in order the graves of the officers and men who fell; they were all turfed over and stone walls built round them, wooden crosses also were erected over each grave with names, &c.

On the 15th January the Boer Commander in the neighbourhood came to camp, and took away 30 men, chiefly those slightly wounded and now tolerably

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recovered. These men were removed to Heidelburg, and, I believe, released into the Orange Free State.

On the 2nd February I removed camp about two miles to the banks of a river (Bronkhorst Spruit), the water near our original site being scanty in dry weather and sometimes muddy.

On the 4th February the Boers removed 10 more men to Heidelburg; on this occasion Dr. Crow accompanied the men to Heildelburg in the hope that he would be permitted to go either into Pretoria or set free elsewhere, they, however, obliged him to return to Bronkhrost Spruit. They gave him two cases of brandy (one dozen each) and about 2 lbs. arrowroot, and a little jam, which, with four oxen and two bags of indifferent meal, were, to the best of my belief, the only supplies we obtained from the Boer authorities without payment during our captivity.

Of the 100 wounded in the action 20 afterwards died, making in addition to the 56 killed a total of 76 deaths caused by this fight.

The general health of the camp was excellent, and with the exception of sickness incident to wounds, there was hardly any disease.

The water supply was excellent after the move of the camp on the 2nd February.

The great majority of the wounds were very serious; one man had six bullets through him, but without injury to bone, he is now convalescent; a great many men had three or four bullets. In cases where bone was struck, the shattering and comminution was fearful. The Boers were all armed with breech loading rifles, chiefly Martini or Westley-Richards. I am inclined to think there were some express or explosive bullets used, to judge from the wounds I saw. In the case of one man shot through the upper third left femur who died I found the bone from the middle to nearly the hip joint one mass of fragments, and counted no less than 15 separate pieces. The course taken by some of the bullets was very curious, in one case a bullet entered through the mouth, fracturing the lower jaw, passed downwards under the skin of the neck, and I extracted it close to the inner end of the clavicle, through an opening made by a second bullet which entered there, and escaped behind the shoulder. Amongst the wounded there were many cases of great interest.

In consequence of communications being cut off with Pretoria the supply of surgical materials which was sent out on the 22nd December gradually became scanty, but we managed by making use of anything we had, such as shirts or clothing, torn up as bandages, meal used for poultices, &c., &c., to get on pretty well.

The conduct of the men during the whole of our captivity was excellent, every individual in camp cordially co-operated in whatever work was to be done, and crime was unknown.

On one occasion the Boer Field Cornet of the district came to camp and insisted on my taking down the Red Cross flag and substituting a white one, but this, I believe was done through ignorance, as in other places they respected the Red Cross flag.

The Boers were, on the whole, friendly, not interfering with us, and bringing in freely any supplies they had for sale.

I cannot speak too highly of the services rendered by Dr. Harvey Crow; this gentleman came out from Pretoria immediately after the disaster and was not allowed by the Boers to return during the whole of the war. He worked untiringly the whole time in the alleviation of suffering and for the welfare of all in camp.

On the 28th March we heard a rumour among the Boers that peace had been concluded, and on the 1st April Captain Anton and Lieutenant Miller, 94th Regiment, arrived in camp with waggons for our conveyance to Natal, and with intimation from his Excellency Major-General Sir E. Wood of our freedom and orders to proceed down country.

We left Bronkhorst Spruit on the 2nd April, arriving at Pretoria on the 3rd, started again on the 6th for Newcastle, where we arrived on the 23rd. Here some of the wounded were left temporarily in the Base Hospital, and on the 30th April I again started with such wounded as were fit to continue the journey for Pietermaritzburg, where I arrived on the 15th May.

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STATEMENT showing the DISPOSAL of the FORCE present at BRONKHORST SPRUIT on the 20th December 1880.

Strength Present.

Date.	Officers.	Non-commissioned Officers and Men.	Women.	Children.	Total.
20th December 1880 - -	8	256	3	2	269

Rank.	Killed.	Wounded.						Prisoners unwounded.		Total.	Remarks.
		Died.	Removed as Prisoners on their Recovery by the Boers.	Transferred to Field Hospital, Pretoria, on 20th December, 4th January, and 6th April.	Transferred to Base Hospital, Newcastle, on 23rd April.	Invalids brought from Bronkhorst Spruit to Pietermaritzburg, arriving 15th May 1881.	Returned to Duty from Bronkhorst Spruit, on release of the party on the 2nd April.	Taken away by Boers.	Left at Bronkhorst Spruit up to 2nd April when returned to Regimental Duty.		
Officers -	1	4	—	—	—	1	1	1	—	8	In addition to the 17 non-commissioned officers and men brought from Bronkhorst Spruit to Pietermaritzburg, 15th May 1881, as invalids, three of those shown as transferred to Pretoria were handed over to me again as invalids when passing through that station on the 6th April, and accompanied my party to Pietermaritzburg, making a total of 20 invalids wounded at Bronkhorst Spruit arriving at Pietermaritzburg under my charge on the 15th May 1881. E. C. R. W.
Non-commissioned officers and men.	55	16	18	21	9	17	12	88	20	256	
Women -	—	—	—	—	—	1	—	—	2	3	
Children -	—	—	—	—	—	—	—	—	2	2	
Total -	56	20	18	21	9	19	13	89	24	269	

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APPENDIX No. IX.

REMARKS ON THE DIAGNOSIS AND TREATMENT OF ENTERIC FEVER.

By Brigade-Surgeon J. A. Marston, M.D., Secretary to the Surgeon-General.

The following remarks upon the diagnosis and treatment of enteric fever are not put forward with a view of curbing the judgment or limiting the efforts of medical officers in any way, nor are they intended as embodying all that is known or might be said. The object in view is to lay before medical officers the results of some experience, reading, and reflection, in the hope that these may prove suggestive or of practical value.

As regard the etiology and causation of enteric fever, much uncertainty unquestionably exists. Even in Europe, where its connexion with a specific poison or with the products of fœcal or other organic decomposition contaminating air or water seems to be established on a large number of repeated observations, the cumulative effect of which amounts to very forcible evidence, it cannot be said that we have exhausted our knowledge of the causes of this fever.

Whatever be the views entertained, it is, however, important that, in the meantime, the action taken should be based upon a pythogenetic hypothesis such as the fouling of water, air, or food with the products of organic matter, if not of specific organic matter, because such a working hypothesis is calculated to awaken and ensure attention to the existence of any insanitary conditions, and the occurrence of every case of enteric fever rightly demands a rigid inquiry into its causes, while every such case should be regarded as a focus from which enteric fever may spread.

In April—May there is a very notable increase in the number of reports of enteric fever cases received from medical officers in charge of corps: the disproportionate number of officers and men attacked who have been but a short time in the country, as well as the single isolated nature of such attacks at a number of different stations, extending as in the present year (1881) from Rawal Pindi to Benares, are very striking phenomena in these reports requiring explanation. On the assumption that every case of the disease depends upon the action of a specific germ or poison, such germ must be pretty universally distributed and ready to spring up in due season with the regularity of a vegetable; and if its presence fouls air, water, milk or food, then a residence in this country seems to confer an immunity from its effects similar to that observed in the case of opium or arsenic-eaters.

But whatever be the causes, there can be no doubt as to its nature. Enteric fever in India is, both in its clinical phenomena when taken as a whole and in its post-mortem appearances, perfectly identical with what is elsewhere known as enteric fever. That it may not here depend upon the real or assigned causes of enteric fever elsewhere, is nothing to the point, seeing that we cannot pretend to have yet ascertained what all these causes are. We find, however, that the fever process is a continuous and not an intermittent one; the temperature rises day by day and on the evening of each day, as in enteric fever elsewhere; the duration of the disease averages three weeks, and is often longer; and it is in a considerable number of cases characterised by an eruption of rose spots in successive crops appearing after the sixth or seventh day of the patient's illness. In short, it conforms to the description by which enteric fever is almost universally recognised.

Although it is perfectly true that the differentiation of enteric fever from other fevers may be very difficult or impossible where the period of observation

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is limited, the difficulty has, apparently, been exaggerated. Even in the absence of rose spots, the temperature and course of the disease, in a case that has been under observation for a week or 10 days, will, in the majority of instances, leave little or no reasonable doubt as to its nature.

But this being so, and it being conceded that enteric fever—setting aside its causation altogether for the present—is the same disease in India as elsewhere, the question may be asked—Is enteric fever a specific disease like small-pox or scarlatina for example, that is to say, is it allied to the other exanthemata.

This question has been answered in the affirmative by a large majority of the profession, including some of the best and most competent observers by whom no doubt is entertained on the subject; still, so long as any uncertainty remains as to the causes of the disease, and so long as a minority of competent observers hold an opposite view, the matter cannot, at any rate, be regarded as beyond dispute.

There are some who might, it is presumed, contend that, quite apart from the action of any specific cause or animal poison, enteric fever is a constitutional form of disease accompanied by, if not dependent on, certain morbid changes in the intestines to which individuals were under certain conditions liable at certain ages, just as they are liable to tubercular disease, Bright's disease, &c.

The occurrence of "spots" in this fever would, however, tend to remove it from the category of non-specific diseases; for all constitutional diseases attended with spots or an exanthem may probably be regarded as specific in their nature, the affection of the skin being one of the most evident and characteristic expressions of blood-poisoning of some kind. On the other hand, it might be urged that as the spots seen in enteric fever do not make their appearance until the seventh day and onwards of the disease, and as their appearance often occurs in relapses of the fever, their presence is rather to be taken as an indication of something absorbed from the morbid lesions in the intestine, and therefore as a secondary and not a primary phenomenon, that is to say, not as one of the expressions of a poison of which the enteric fever process is the outcome.

These are, however, pathological refinements with which we are not in the meantime concerned. The point which it is desired to emphasise is this—that one of the most common and fatal fevers of this country is enteric fever; that it chiefly attacks soldiers during their first years of Indian service; that it appears to prevail, though unequally, both in the plains and the hills, especially during the hot and rainy season; and that by its symptoms during life and by its pathological appearances after death it can be recognised as genuine enteric or intestinal fever; and that where the period of observation is sufficiently extended, it can, in a large majority of cases, be diagnosed by the conformity of its symptoms as a whole to the descriptions given of enteric fever elsewhere.

Diagnosis.—As is well known, a certain interval of time for observation is essential in every case; for it is not until seven days or more have elapsed from the commencement of the fever that the rose spots characteristic of the disease appear, if they are to appear at all in the course of the case. A fever case, then, attended with rose spots which disappear momentarily on pressure and last for a few days, to be succeeded by others, or a crop of fresh spots in their neighbourhood, is absolutely diagnostic. It is a good plan to mark the skin with the date of the spots as they make their appearance. Failing these, the diagnosis must depend upon the conformity or non-conformity of the symptoms in the group to those characteristic of enteric fever. In the case of a young soldier newly arrived—within the first two years of his service, say—in this country, complaining of a sense of languor, *sleeplessness*, and dyspeptic symptoms, attended with increased temperature, always *suspect* typhoid fever. Suddenness of attack, that is, where the patient is able to assign a given time with precision as the commencement of his disease, is, as a rule, against the diagnosis of enteric fever.

Temperature.—During this interval of observation and uncertainty of diagnosis, in which the symptoms have not had time to develop and express themselves, the patient's temperature should be taken regularly and systematically at least twice daily, and the chart compared with that given of enteric fever in any standard medical work. Exact conformity between them

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is not to be expected; there will probably be differences in different cases, but conformity in type or character may be expected in the majority of cases. A temperature of 104° within the first 24 hours of fever, or one that approaches the normal on any evening during the first week of the fever almost invariably, but *not invariably*, excludes enteric fever. Exceptional instances of the former are far more common in this country than at home, those of the latter (normal temperature during first week of fever) being, however, so excessively rare that they may practically be discarded from consideration.

There is no reason why enteric fever should not occur in an individual the subject of ague, to be directly preceded by, or complicated with, or followed by, attacks of intermittent or malarious fever; but there seems to be no satisfactory evidence for including a typho-malarial fever as a distinct morbid entity in our nosological system. All that can be said is that troops exposed to the influence of malaria are not protected by it against enteric fever, and that when the latter disease occurs in such subjects it may be more complicated, difficult of diagnosis, or possibly somewhat prolonged and modified in its course. Neither the anatomical features, nor the pathological course of an enteric fever is thereby so modified, however, as to warrant us in assuming that a true hybrid fever has been produced, or that the stamp of the disease has been essentially altered by any malarious impression made upon it.

Still there can be no doubt that a patient admitted with the symptoms and history of ardent fever, and exhibiting a higher range of temperature in the first and second days than is usually witnessed in enteric fever, as well as a patient with the symptoms and rapidly acquired maximum temperature of ague, may go on to exhibit the symptoms and run through the whole course of an enteric fever of pronounced type.

The differentiation of enteric fever from other forms of fever by means of a temperature chart is frequently difficult and occasionally impossible. In cases of ague the temperature of the hot stage rises to 103° or higher, and is followed by sweating, and the pyrexia in what eventually turns out to be enteric fever may be intermittent, especially at its commencement; but what is more common and far more difficult of being distinguished is the difference between the pyrexia of remittent fever and that of enteric fever in this country; for the pyrexia of the latter fever is remittent in character; and in undoubted though rare cases of enteric fever, where at the end of a week or 10 days the morning temperature becomes normal or subnormal, or where, as in relapses, there is an interval of several days of apyrexia, and a recurrence of fever with spots, &c., takes place, the diagnosis is most difficult, and the character of the disease can only be determined by the presence of other symptoms, and by the fact that in cases of remittent fever the temperature does not usually rise gradually at the beginning of the disease from day to day by the ladder like progression that it does in enteric fever, and the temperature of a remittent fever chart indicates also numerous short irregular intervals of apyrexia. The temperature chart, for example, of a fatal case of remittent fever, received at the moment of revising this paper, would very well pass for a typical chart of an enteric fever case if a piece of paper were placed on the chart so as to conceal the record of all the temperatures below 100° that occurred during the patient's illness, which in its duration and character closely mimicked a case of enteric fever, but a post mortem examination disclosed that it was not. *En passant*, it is worthy of remark that the temperature will occasionally become subnormal and be followed by a fresh crop of spots and pyrexia in the course of an enteric fever case. Hæmorrhage from the intestine, epistaxis, or diarrhœa will almost always affect the temperature—reducing it.

The disease which most closely mimics enteric fever is tubercular disease of the intestine; and, clinically considered, this mimicry is so close as occasionally to defy our efforts at diagnosis. Happily tubercular disease of the intestine is rare among Europeans in this country, but it is probable that some at least of the cases of enteric fever reported among natives have, in reality, been tuberculous disease of the intestinal glands.

It must, at any rate, be admitted that in the majority of instances the diagnosis of enteric fever will be uncertain for a week or 10 days, during which period the symptoms will be those more or less common to all fevers, and the treatment must obviously be chiefly negative or expectant, with care to avoid doing injury.

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Once diagnosed, however, it is equally admitted that the fever cannot be cut short. The pathological process follows a definite course, with certain symptoms and dangers appearing at definite periods and marking the dangers of those periods, but the fever rôle once established goes on developing, the manifestations of one period not repeating themselves at a later period, although forming part and parcel of one train of phenomena indissolubly bound together in one pathological process, as much as if a continuous tape measure were being pulled out which disclosed a varying and different pattern as more and more of it came into view.

For example, the headache of enteric fever is replaced by delirium. As a rule, the two do not co-exist, and when they do persistently, the fact is rather suggestive of some intra-cranial mischief. The ochrey stools, tympanites, the hæmorrhage from the bowels, the epistaxis, deafness, and pulmonary complications appear in a definite order, and not indiscriminately at any time.

The simplest plan will be to consider in the first place the symptoms and features common to all cases of enteric fever, however varying in degree, with their treatment; and then to consider the groups into which cases of this disease tend naturally to fall of themselves according as this or that tendency or danger predominates or appears impressed upon them.

Under the first head comes the general management of enteric fever, that is, means adopted to meet the requirements of a patient under the altered physiology of the body and the perverted local action of certain organs in particular when dominated by a disease lasting at least three weeks.

These requirements embrace accommodation and nursing, dieting and use of stimulants, means for reducing temperature, regulation of bowels.

Accommodation.—The ward or room should be light, airy, divested of all unnecessary furniture, and so situated as to ensure quietude, with latrine and ablution conveniences easily accessible. For this purpose a small ward in which the patient can be isolated is to be preferred, although his isolation is not essential. The ward or room should be capable of being darkened, the patient should be lightly covered with bed clothes, and, obviously, the cooler the atmosphere in which the patient can be kept the better. (The special methods for securing this will be dwelt upon subsequently.) Scrupulous cleanliness should be adopted ; some carbolic acid or other disinfectant should be used for the bed pans and for soiled linen, which should, of course, be at once removed ; and it is well to have the ward or room supplied with a basin and water, a ball of sand soap, and a little disinfectant for the use of the sick attendants.

Nursing.—The importance of good nursing is so obvious that it need not be dwelt upon : the medical officer must take personal trouble to make systematic arrangements and give plain and decided directions, himself securing, also, by unexpected visits to his patient, that these are carried out.

The nursing would be by a regulated system of reliefs, the apothecary being charged with giving instructions to each individual, orderly, or nurse, in turn. A rough diary should be kept, if the nurses can write, recording the time they came on and went off duty, the times at which medicine and nourishment were given and its nature, together with the details of the patient's symptoms and progress, such as movement of bowels, amount of sleep, delirium, &c. This tends to create an intelligent interest in the case, and ensures attention to the patient's wants.

Diet.—Considerations regarding the nature of the disease and the anatomical lesions of the small intestine characterising it render the subject of diet the most important of all, probably, for the safe conduct of an enteric fever case through its course. The chief errors seem to consist in giving the patient too much food or in too great variety, or of a kind unsuitable for his state at the time, or in quantities not adapted to, and sufficiently frequently repeated for, his requirements. On physiological and common sense grounds it must be wrong to give a patient on one and the same day beef tea and soups, milk, starchy foods, alcoholic stimulants, and soda water, besides medicine; a man in health would run the risk of indigestion from such a combination, much more a sick man with diseased action going on in his abdominal organs. For the first week an enteric fever patient requires, in the majority of cases, little more than a liberal supply of cooling drinks, such as iced water acidulated with phosphoric or other mineral acid, together with small quantities of beef juice

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or milk frequently repeated, and either no stimulants at all, or these in small doses and well diluted with water. It has been found as the result of experience that the practice of giving spirituous stimulants, sometimes in large doses, is injurious: their exhibition tends to increase the headache and discomfort of the patient, to complicate his case with symptoms that may be attributable to them and not to the disease under which he is labouring; while their early exhibition blunts the edge of a weapon which the medical attendant may find to be, at a subsequent stage, his most powerful aid in overcoming the effects of asthenia. Speaking generally, the rapidity of the heart's action stands directly related to its diminished power, just as, to use a simple illustration, a child walking by the side of an adult has, in order to keep pace with him, to make up by rapidity of pace on his part for the greater power and stride of the adult. And this diminished power of the heart in fever may be due to either a general feebleness in which the heart shares, or to a granular degeneration of the cardiac muscle brought about by the increased body heat, which beyond a certain degree has a direct influence on the myosin of muscle, or by diminished or perverted nerve force, or by the influence of a poisoned blood. For all these, except the last (poisoned blood), alcohol is available, for its exhibition tends to increase nerve force, to make up for loss of power, and to diminish temperature; but it will have no influence on—unless it be to aggravate—the effect of a poisoned blood. A feeble circulation tends also to favor local congestions and inflammations. Sweating is a sign of this diminished power and lowered nerve influence. The use of alcohol is therefore indicated in these conditions, but it is well to administer it in small and frequently repeated doses. The effect, if good, will soon be determined by watching its effect on the pulse and temperature, and in diminishing perspiration and increasing the tendency to sleep on the part of the patient. If these follow, it is doing good, and at any rate it is doing no harm; but it is in the latter, and not the earlier, stages of enteric fever, as a rule, that these conditions have to be met, and it is then that alcohol is most indicated and most useful.

Again, as regards milk, which has proved so useful a diet in the hands of many experienced physicians, the results of Sir William Jenner's observation is corroborative of that of others. Milk in any quantity sometimes, though rarely, disagrees with a patient, but consumed in large quantities, as it often is to quench the patient's thirst as much as to feed him, and especially in certain conditions and stages where ulceration is going on, or where mucous catarrh of the small intestine is present, the casein of the milk is a source of irritation and does much harm. It must not be forgotten that, as an eminent chemist told Sir William Jenner, a pint of milk is equal to a big mutton chop. Not only may milk when given injudiciously sometimes give rise to vomiting of large pieces of curd preceded by attacks of colicky pain and tympanites, but the stools are frequently made offensive, watery, and more alkaline by the undigested fragments of casein that may be detected in them.

If the foregoing facts be borne in mind, then milk, which is always available and cheap, forms for ordinary cases of enteric fever and for the earlier stages of that fever an excellent diet; but its administration must be watched and care be taken by its proper dilution and by the administration of sufficient doses of pepsine with a little hydrochloric acid to guard against these evils. In some cases of enteric fever, in the case of officers, and in the later stages of the fever when the asthenia and the liability to tympanites and diarrhœa become more pronounced, the administration of the juice of fresh meat (Brand's essence of meat) is to be preferred to milk. This juice is readily made as follows:—

"Take one pound of fresh beef, free from fat, chop it up fine, and pour over it eight ounces of soft water, add five or six drops of hydrochloric acid, and 50 or 60 grains of common salt, stir it well, and leave it for three hours in a cool place. Then pass the fluid through a hair sieve, pressing the meat slightly and adding gradually towards the end of the straining about two more ounces of water. The liquid thus obtained is of a red colour, possessing the taste of soup. It may be taken cold a tea-cupful at a time. If preferred warm, it must not be put on the fire, but heated in a covered vessel placed in hot water.

"Should it be undesirable for the patient to take the acid, this soup may be made by merely soaking the minced beef in distilled water."

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Very concentrated flesh juice suitable for cases of illness attended with great debility may be prepared as follows:—Take two or three pounds of beef, mutton, and veal respectively, carefully remove all the fat, and cut the lean part into fine fragments, put the whole into a jar *without any water*, and let it simmer (*but never boil*) for eight hours; then throw the whole upon a fine strainer, and use the fluid which passes through the filter. A tea-spoonful of this juice, which becomes jelly on cooling, as frequently as desired, forms a very concentrated and nutritious food. A small quantity of hydrochloric acid, with or without pepsine or lacto-peptine, may be given with this if required.

It is well to allow the patient the juice of lemons or lemonade, or to add some vegetable essence or extracts to the patient's fluid food from time to time.

There is probably no direction in which patients have practically benefited more from advances in knowledge than in this, of how to feed in enteric fever with most advantage to the patient and least risk of injuriously affecting the lesions in his intestine.

The Reduction of Temperature.—The increased temperature incidental to the fever itself is in India supplemented by that of the climate, and it is not at all improbable that the increased mortality from enteric fever in this country is somewhat attributable to the effects of heat exhaustion. Of late years the use of cold baths in the treatment of febrile states has become very common in Germany, Switzerland, and at home; and making every allowance for differences in mortality in different epidemics or outbreaks of enteric fever and changes in classification (diagnosis), and for the inclusion of numerous cases of the more ephemeral forms of fever in the statistics, as well as for the tendency which always exists to extol unduly new remedies and practices, there seems to be such a strong residuum of evidence in proof of the value of cold baths in the treatment of enteric fever that efforts in this direction, in this country especially, would be well worth making.

In addition to the use of sponging of the patient's body with tepid or cold water, or vinegar and water, the exposure of pieces of ice in the ward, and the use of tatties and other appliances that might be extemporised with a little ingenuity and the aid of the bhistie, there are two methods by which the pyrexia of a fever patient may be reduced, *viz.*, by the use of cold baths and by internal remedies.

There are two dangers connected with a superheated blood: one from its direct effect on the nerve centres, the other is indirect, and rather an indication than itself a cause of danger, and that is where the increased temperature is the expression of some local mischief or inflammation of an internal organ and disintegration of tissue. The sources and mechanism of increased temperature cannot yet be said to have been fully ascertained. There would seem to be many grounds for the assumption that an increased temperature may be the direct outcome of excited or perverted states of the nervous system, as for example, in tetanus, certain forms of neuralgia, hysteria, &c. The sudden and temporary rise of temperature caused by mental emotion and surprise indicate that nervous force may be directly translated into (that is, made correlative of) heat. Speaking generally the beneficial effects that follow the reduction of temperature in certain febrile states are very striking—in controlling delirium and causing sleep for example. The diarrhœa of children during the hot season, too, in America has been found by the American physicians to be most amenable to treatment adapted to reduce the patient's temperature. Supposing, then, that an enteric fever patient were not suffering from any condition or complication that manifestly contra-indicated it, such as intestinal hæmorrhage for which the movement of the patient into and out of a bath would be dangerous, or very weak heart, or congestive bronchitis with weakened circulation, there is no reason why he should not be subjected to cold bathing. For this purpose a bath should be wheeled to the side of the bed and the patient lifted into it on a sheet whenever his temperature rose to 103° or higher. The bath may at first be of the temperature of 80° or 90°, and cooled down subsequently to 65° or 60° by the addition of iced water. The length of time that the patient should stay in the bath will depend upon the reduction of his temperature as tested by a thermometer, the state of his pulse, &c. The temperature commonly continues to sink for half an hour or so after the patient's removal from the bath. It seems preferable to limit the application of cold affusion to cases approaching coma. It may be broadly stated that the

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more the abdominal symptoms predominate the less useful is cold bathing; the greater the pyrexial symptoms the more useful it is. All that is required is a bath on wheels long enough to admit of a patient's lying down in it, but so sloped as not to cause the immersion of the head. If no means exist for the adaptation of India-rubber tubes from the bath to a tap of water, it is easy by pails of hot and cold water to obtain the requisite temperature. The patient is lifted into the bath on the sheet on which he is lying, and a clean sheet being placed over the top of the bath, that around his body is removed in order to allow free access of water to his person. The bed is made ready for his reception by placing a macintosh sheeting over the under-sheet and a blanket on the macintosh. The patient having remained in the bath the necessary time, during which his mouth and tongue should be cleansed and his face sponged, he is taken out and covered, as he is being removed, by the sheet above the bath, when he is placed on the blanket which is wrapped round him. In about half an hour the sheet, blanket, and macintosh are removed, when his body will, of course, rest in the under-sheet which has been kept dry by the foregoing procedure.

The patient's pulse and temperature should, of course, be taken before he is put in the bath. Ten or fifteen minutes' immersion will suffice as a rule; but the length of time must obviously depend upon the effect produced. If the temperature sinks a degree or two in the bath, it will probably fall more after his removal from it. A dose of quinine given after the bath is stated to aid very much in keeping down the temperature—at least such is the experience of the London Fever Hospital, where a plan of bathing, essentially similar to that just described, is followed. Another method of reducing temperature and pulse which is best adapted to the early stages of enteric fever, is by the administration of aconite—one minim dose of tinct. aconite B. P. every hour throughout the day, not the night. The tincture may be given every half hour for the first hour or so, then every hour, until 10 minims, or at the outside 15 minims, have been taken. The advantages claimed for this treatment are that it slows and strengthens the pulse, lowers the temperature, and tends to refresh and clean the tongue. It must be remembered that these results do not make their appearance until some hours after the administration and discontinuance of the remedy, the effect of which, of course, requires watching. For example, if 10 minims of tinct. aconite be put in 10 tea-spoonfuls of water, and the patient given a tea-spoonful every hour during the day, the remedy being discontinued at night, it is not until the following morning that the properties of the drug are manifested.

There is no need to touch on the administration of saline diaphoretics, as these are in ordinary use, and if they do no special good over and above what may be attained by the use of cold water, ice, and iced drinks, they certainly do no harm.

Quinine in large doses will diminish the patient's temperature, and the salycilate of quinine would probably be a useful preparation; but quinine by itself is not of much use in enteric fever until a late stage is reached, when the ladder-like diurnal up-and-down dips of temperature, morning and evening, are well marked. Moreover, quinine often increases any existing gastric irritation. Of the use of alcohol we have already spoken. Perspiration may be restrained by sponging and drying the surface, and it greatly adds to the patient's comfort to do this frequently.

Regulation of the Bowels.—It is a mistake to suppose that all enteric fever patients suffer from diarrhœa, for some, on the contrary, have constipated bowels. The majority of cases, no doubt, have looseness of the bowels at some period or other of the fever. The two may be combined as it were, and this is very common, in that the colon may contain hard and dry feculent matter, while the small intestine may contain loose feculent matter, which, unable to escape, may give rise to tympanitic distension of the bowels with great discomfort to the patient, if not worse.

For constipation enemata of warm water or beef-tea are by far the best and safest remedies; only the mildest aperients should ever be administered and in the smallest doses; and a very good form of mild aperient is the phosphate of soda with dilute phosphoric acid.

Diarrhœa is a much more troublesome symptom. Experience has taught that, so long as the bowels are simply loose, the stools amounting to three per

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diem, it is better to leave matters alone, or try the effect of a starch enema with 10 or 18 drops of laudanum in it. In all cases of diarrhœa it is most important to examine the stools as to the amount of fluid they contain, their marked alkalinity to test paper or otherwise, the presence of undigested milk or food, and then to examine the patient's abdomen as to its distension, pain on pressure, &c., and to be guided in the choice of remedies by the information gained:—A diminution or greater dilution of the food administered, a smaller allowance of fluid if the stools are very loose, a mineral acid like aromatic sulphuric acid if these are markedly alkaline, pepsine with a little hydrochloric acid if undigested particles of milk or food be detected in the stools, or powders composed of 10 or 20 grains of bismuth, a little sugar and a drop or two of turpentine if there be tympanites, or very finely powdered charcoal as recommended by Sir William Jenner. (For further remarks on the same subject the reader is referred to subsequent pages.) Hot fomentations, or cold (ice) may be applied to the abdomen as may be most agreeable to the patient; but as a rule, hot fomentations only aggravate the distension, while more relief is obtained from cold applications which, in the case of any intestinal hæmorrhage especially, are more useful. It must be remembered that, owing to the prostration of the nervous powers of the patient, the muscular coat of the intestine is apt to become weakened, and when swollen with gas the intestine may fail to expel its contents, but the mechanical effects of such distension on the thoracic organs and on the nerve centres may be very grave.

Sleeplessness is best overcome by searching for and removing as far as practicable, causes of discomfort, in the bowels especially, by cold sponging of the body, or of the face, head, and hands if the cold bath treatment be not followed; also, by the administration of bromide of potass, and hyoscyamus-chloral and opium are both unsuitable in the early stages of the fever, and probably dangerous, as a rule, in any stage unless in the class of exceptional cases hereafter referred to.

When the tongue is dry and covered with fur, with red tip and edges, and sordes are present, it adds to the patient's comfort if his mouth be swabbed out with a camel-hair brush dipped in a lotion of tannic acid, glycerine, and rose-water, and small fragments of ice be given him to suck.

Cases of enteric fever naturally tend to fall into certain groups according to the character and prominence of indications of danger afforded by the symptoms and course of the fever.

The glands of the small intestine are at the maximum of their swelling and infarction about the tenth or twelfth day of the disease, when they begin to ulcerate or slough, and from this period onwards the abdominal symptoms become very pronounced. Later on complications and irregular pyrexial states may ensue from the reabsorption of the materials of disintegrating ulcers or sloughs into the blood: for enteric fever has a more than coarse alliance with pyæmia in these respects, that anatomically it runs its course in the abdominal lymphatic system, in the solitary follicles, peyerian and mesenteric systems; and later on, diseased processes are also probably set up by the introduction into the blood of products from the intestinal lesions.

Nervous System.—But, as in all cases of blood disease, the patient's nervous system may be so oppressed and overwhelmed that he may die before the anatomical features of the disease have had time to express themselves. The patients in these rare cases somewhat resemble those of typhus fever cases in aspect and expression; headache is quickly followed by noisy delirium which passes into comatose state, and there is high fever, embarrassed circulation, rapid or oppressed breathing, generally confined bowels, and scanty secretion of urine, which is, perhaps, albuminous. There is, however, a class of cases in which the nervous phenomena become early expressed and continue to be pronounced in character. The subjects are individuals of nervous temperament, sensitive, and mobile in character, and often well educated and accomplished men. In them, headache is soon followed by delirium which is usually not noisy or violent, but busy in character, to which is added sleeplessness, a quick, feeble, and sometimes rather intermittent pulse, and muscular tremor. Occasionally, such patients are of an age when the intestinal lesions of enteric fever cannot be expected to be of a very serious kind, nd the stress of the disease apparently falls on the nervous system. These

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cases have nothing to do with a history of intemperance, as they are observed in the most temperate. The object in dwelling upon them is this,—that they stand stimulants well as a rule, and opium, if given in *small* and frequently-repeated doses, seems to be of real benefit. One eighth or one fourth of a grain of the extract of opium, for instance, at intervals of an hour or two hours, and alternated with small quantities of good soup, or meat extract, and iced brandy and water—or better claret—will cause them to sleep, with benefit to their vascular and nervous systems. The object of giving the opium in small doses is that the stimulating properties of the drug are obtained, its effect can be watched, and its administration discontinued when necessary. Nervous irritability increases with nervous exhaustion, and the centre of respiration is no exception to the rule. With the increasing exhaustion the respiration becomes more hurried; the lungs become engorged with blood at their more depending parts; and the power of the heart is lessened. At the close of many wasting diseases besides fever, a broncho-pneumonia may consequently appear and exhaust the patient's life, and this condition may be produced by the gradual exhaustion of nerve-power even irrespective and independent of any septic change and of alteration in the blood.

In what may be called the abdominal group of cases there is ample room for the exercise of great care and judgment. The ochrey stools, which are very characteristic of the disease, do not occur until softening and ulceration of the intestinal lesions sets in. As has been already pointed out, it is better not to check a moderate diarrhœa, and as to the best means of checking this when required, the indications obtained from a careful examination of the stools and the patient's condition supply the best information. Some of the worst cases are those which come under treatment at an advanced stage, for with this tolerance of the disease it occasionally happens that there may already be *deep* ulceration of which Sir William Jenner considers muscular tremor, when this is present in a marked and disproportionate degree, to be a sign. Such cases may speedily terminate in perforation and consequent peritonitis.

It sometimes happens that a patient will, during the stage when sloughs and the detritus of ulcers are separating, vomit, feel faint, and his pulse will rapidly increase in rapidity while his temperature is sinking. This coincidence of a going-up pulse with a going-down temperature is an indication of grave danger as a rule. It is usually an indication of the impression made in the nervous centres and heart by the separation of sloughs into the cavity of the intestine, of hæmorrhage into the bowels, or of the extension of ulceration outwards to the peritoneum or of perforation itself. The treatment will vary accordingly, but small and frequent doses of stimulants, and of ice, or iced extract of meat with opium may be required; and if the cause be hæmorrhage, ice, gallic acid, turpentine, or ergot should be administered internally, with ice applied to the abdomen, or ergotine may be injected subcutaneously.

A case of the following kind occasionally occurs:—An enteric fever patient has reached the third or fourth week of the fever, and is, of course, very enfeebled. His pulse becomes very quick, weak, and possibly intermittent or irregular; his breathing quick, shallow, and embarrassed; is face is pallid and wears an anxious expression, and he is perspiring freely. On examination his belly is found greatly swollen from tympanites, and a tympanitic note on percussion shows that the diaphragm is pushed upwards; but there is no evidence of peritonitis. This distension of course mechanically impedes the action of the heart and lungs by encroaching on the thoracic cavity; the weakness of the muscular coat of the intestines and the nervous prostration of the patient have allowed of a great accumulation of flatus which, under other circumstances, would have caused extreme colic, and although no pain is felt or expressed, its effect on the sympathetic nerve centres and pneumogastrics is such as to give rise to a state of pseudo-collapse. In such cases the great aim is obviously to relieve the distension by gently passing a long and well oiled tube up the bowel so as to allow of the escape of fœces and flatus, while a combination of bismuth and white sugar with a drop or two of turpentine may be administered every hour or two, or some finely powdered charcoal may be given. It often happens in such cases that one of the sacculi of the colon becomes distended with fœces which block the passage of flatus, and the relief of this will overcome a grave state in the patient.

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There is no need to advert to peritonitis, the result of perforation, for it is probably always fatal; but it is worthy of notice that peritonitis in enteric fever is not always attended with the well-marked phenomena indicative of that disease.

Dysentery is occasionally a serious complication of enteric fever. It rarely happens that a patient is attacked with the two diseases at the same time. What is more common is for a patient to have suffered from dysentery previously, and for the irritation caused by the diarrhœa and passage of flatus incidental to enteric fever to have induced a recurrence of dysenteric symptoms—straining, tenesmus, and painful defœcation. The best plan in such cases is, after washing out the large bowel with warm water, to administer an enema of starch and opium, and to exercise more than common care that the nutriment is given in form and quantities most easily assimilated.

Vomiting with the symptoms of a gastric catarrh and fermentation is occasionally troublesome in enteric fever. In these cases it is worth bearing in mind that one drop of a combination of carbolic acid and tincture of iodine, administered every four hours well diluted with water, is sometimes very efficacious. If the patient has reached a convalescent stage when soft pudding or starchy materials can be taken, the use of "maltine" will be found beneficial.

Such are some of the dangers brought about by the diseased state of the intestines; but there are others attending the thoracic organs. Coincident with an advanced stage of the fever, pulmonary complications in the shape of pneumonia and pleurisy are apt to ensue. The former is commonly of thrombic or embolic origin, and if the patient be broad-chested with voluminous lungs and a relatively weak heart, his asthenic condition with the increased temperature expressive of the lung complication is very likely to give rise to a form of cardiac apnœa or paralysis of the heart, with the formation of clots in that organ or in its large vessels. This would appear from the reports of post-mortem examinations to be a frequent cause of death, which the effects of heat—exhaustion in this country no doubt contribute materially to bring about. The incidence of such a state must always be kept in mind and guarded against, as far as practicable, by watchful stimulation and feeding, for it is sometimes apt to ensue very suddenly. When it does, the most liberal administration of diffusible stimuli will commonly fail to dissipate the danger.

There are several minor complications and affections that may arise in the course of an enteric fever case; but reference is made to two only, one of which is not uncommon, the other rare.

One or other of the iliac veins may be blocked with coagulum, in which case the leg and thigh assume the aspect of the phlegmasia alba dolens witnessed in women after parturition. It requires no treatment beyond rest, the application of a flannel bandage, and frictions with warm oil or an opiate liniment.

It sometimes, though rarely, happens that the areolar tissue of the neck and chest of an enteric fever patient become emphysematous; or in a patient who has died suddenly, bubbles of air or gas are found in the blood of the portal system and right side of the heart when the body has been examined before any decomposition has set in to which this might be attributed. Now the first, an emphysematous state of the deeper-seated areolar tissue, can generally be traced to an ulcer of the larynx; the other (gas in the venous blood) has been attributed to its spontaneous generation from the blood elements themselves, or to the entrance of air into a vein from one of the ulcers in the intestine.

The so-called relapses of enteric fever, that is to say, a recurrence of the pyrexia, spots, diarrhœa, and all the phenomena of the fever, after a well marked period of apparent convalescence, are not uncommon, and form an interesting but separate study.

A soldier after recovery from an attack of enteric fever is unfit for military duty for a period varying from two to six months or more, and care should be exercised in the invaliding of officers to England when convalescent from this disease; for the fatigue and motion of a long railway journey, together with uncertain, coarse, or improper food, may prove more dangerous than the risk to be incurred by detention in a hot and enervating climate. A patient re-

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covered from a severe attack of enteric fever usually presents a fat, flabby, and anæmic aspect, and is often enfeebled in body and mind out of all proportion to what would be inferred from his appearance; but a sea voyage or hill climate, with good food and ferruginous tonics, generally restores him to excellent health, unless—and this does not appear to be common after enteric fever in this country—the disease is followed by some tuberculous affection of the lung. Happily, too, for the patient, enteric fever is very rarely repeated in the same subject, one attack appearing to confer an immunity from subsequent ones.

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APPENDIX No. X.

REPORT ON THE CAUSATION AND TREATMENT OF ENTERIC FEVER IN THE 1st BATTALION WEST RIDING REGIMENT, STATIONED AT LUCKNOW.

By Brigade Surgeon R. A. CHAPPLE, A.M.D.

From 19th March to 11th August 1881, 16 cases of enteric fever were admitted. The facts elicited, whilst investigating the cause of the disease, and the conclusion drawn from them, are stated as briefly as is consistent with clearness, and may be found of some interest.

RETURN "A" showing the COMPANIES from which the CASES came and the DATES of ADMISSION to HOSPITAL.

Company.	Name.	Date of Admission.	Company.	Name.	Date of Admission.
F	J. K.	19th March	G	J. D.	14th May.
F	H. W.	22nd "	F	J. McN.	7th June.
F	G. C.	20th April	F	W. G. S.	8th "
F	G. G.	22nd "	C	D. C.	10th "
D	J. P.	22nd "	D	J. B.	18th "
C	J. P.	24th "	E	J. H.	31st July.
F	E. P.	26th "	D	J. C.	2nd August.
B	W. P.	8th May	H	G. C.	11th "

On the occurrence of the first case, 19th March, a searching investigation was made. It may be considered an unnecessary repetition to state the result of inquiries on points so frequently and fully reported on from time to time, but the reasons for attributing the origin of the disease to a sanitary defect cannot be clearly understood without reviewing the conditions under which the men lived at the time the disease was contracted.

The barracks occupied by "F" Company are quite new, neat, very clean, well ventilated, built on clear open site (*see* plan attached) with ample accommodation—a minimum of 2,000 cubic feet per man. As barracks they are all that could be desired.

Water for drinking and cooking purposes for the whole regiment is drawn from two wells similarly constructed. Description of one answers for both.

The wells are lined with brickwork which is carried about 7 feet above the level of the ground, forming a parapet which effectually protects the well from pollution by surface drainage. There is a force-pump on the top which is closely covered and approached by a flight of steps, within a few feet of the well there is a large filter bed, in construction not unlike a powder magazine, lighted by glass, carefully guarded from exposure to air and admission of dust. The water pumped from the well passes through an iron pipe directly into the filter bed, runs through layers of sand and charcoal, and is drawn off through taps fixed within about 3 feet of the foundation of the filter bed. These taps are locked, and twice a day under the supervision of a non-commissioned officer they are opened. Water carriers convey the water for cooking purposes to the cook-houses, and drinking water is conveyed in iron vessels by soldiers to their barracks and by them poured into covered half tubs, in each of which stands a Macnamara's filter, the water, which must first pass through the filter, being drawn off through taps fixed in the tubs. It will be seen that drinking water gets double filtration. Pollution of water by sewage percolation or by surface drainage is not possible, there being neither sewers nor

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cesspools and no surface drains except those carrying off water from ablution rooms.

The water may occasionally be fouled by fœcal matter carried in a pulverescent form by the wind, but as the water is only exposed to the air whilst being conveyed from the filter beds to the barrack rooms, danger from this source is highly improbable.

Milk.—Few men ever use milk. The families obtain milk from the same source as those men who do use it, and consume it in far greater quantity, but out of a strength of 49 women and 82 children no case of enteric fever occurred.

Beverages.—Soda-water, &c. is made from filtered water under regimental supervision. The water used in making "ginger pop" sold in the coffee shop is always boiled, it being more economical to make the "pop" with boiling water and allow it to cool before being bottled.

Rations and Cooking.—Rations good. All the cook-houses are new. The mode of cooking, as throughout all India, is dirty, but is not likely to produce the disease under consideration.

Dry-earth System of Conservancy.—At each seat a small box or compartment with dry earth and a scoop. The soldier is supposed, after using the pan, to throw in sufficient dry earth to deodorize the filth. The sweeper is supposed to remove each pan immediately after use, to empty the contents into a large receptacle, and again cover it with earth. Dry earth is then supposed to be thrown into the pan before being replaced under the seat. The large receptacles are removed daily and the contents buried. The liquid from urinals and cook-house washings are similarly dealt with.

It will be seen that the result of the investigation was rather negative, the weak point in sanitation was undoubtedly the dry-earth conservancy. Frequent inspections were made on the occurrence of cases subsequently, but without any fresh light being thrown on the origin of the disease.

Causation.—It will be necessary to state briefly the views generally entertained respecting the causation of enteric fever:—Climate, malaria, specific poison, contamination of water or air by fœcal matter are the causes most generally assigned for the production of enteric fever.

Climate.—Pathology proves the enteric fever of England and that of India to be identical. Assuming then the unity of enteric fever, is it logical to assign totally opposite conditions for the production of the same disease? Even in India there are diversities of climate, and enteric fever is found in all, it is found in climates very hot, very dry, very moist, and very cold, in the hills and in the plains. In the heat of summer in England the disease almost totally disappears, whilst in India it is at its height in the hottest month. The term "climate" is too comprehensive for accuracy, it comprises every variety of soil, physical features, temperature, and conditions of the atmosphere throughout the world. If climate be assigned as a cause, the nature of the climate should be defined.

Malaria.—Malaria is equally unsatisfactory etiologically considered. Enteric fever exists where malaria is unknown, old residents in India who are saturated with malaria are practically exempt from enteric fever.

That heat, malaria, &c. do materially affect the course of the disease and render enteric fever a very fatal disease in India cannot be doubted, but neither separately nor combined do they originate the disease.

Specific Poison.—Of all views respecting the causation of enteric fever, that of transmission through specific poison seems the most natural. Latent germs of the disease may, under certain favouring circumstances, suddenly spring into activity. In India all discharges from the bowels, both of those in and out of hospital, are buried every 24 hours. When no fresh case occurs in barracks until the incubative period has passed, counting from the date of removal of the last case to hospital, the chain of transmission may be said to be broken. Where there are waterclosets, pipes, drains, &c. the germs of disease may remain adherent to the drains or pipes, but in India, unless we assume that the germs of disease hang about the walls of latrines, or are borne about by the winds, we must reject the view of unbroken transmission of the poison when there are long intervals between the occurrence of cases, and accept that which assigns fresh poison to the new case.

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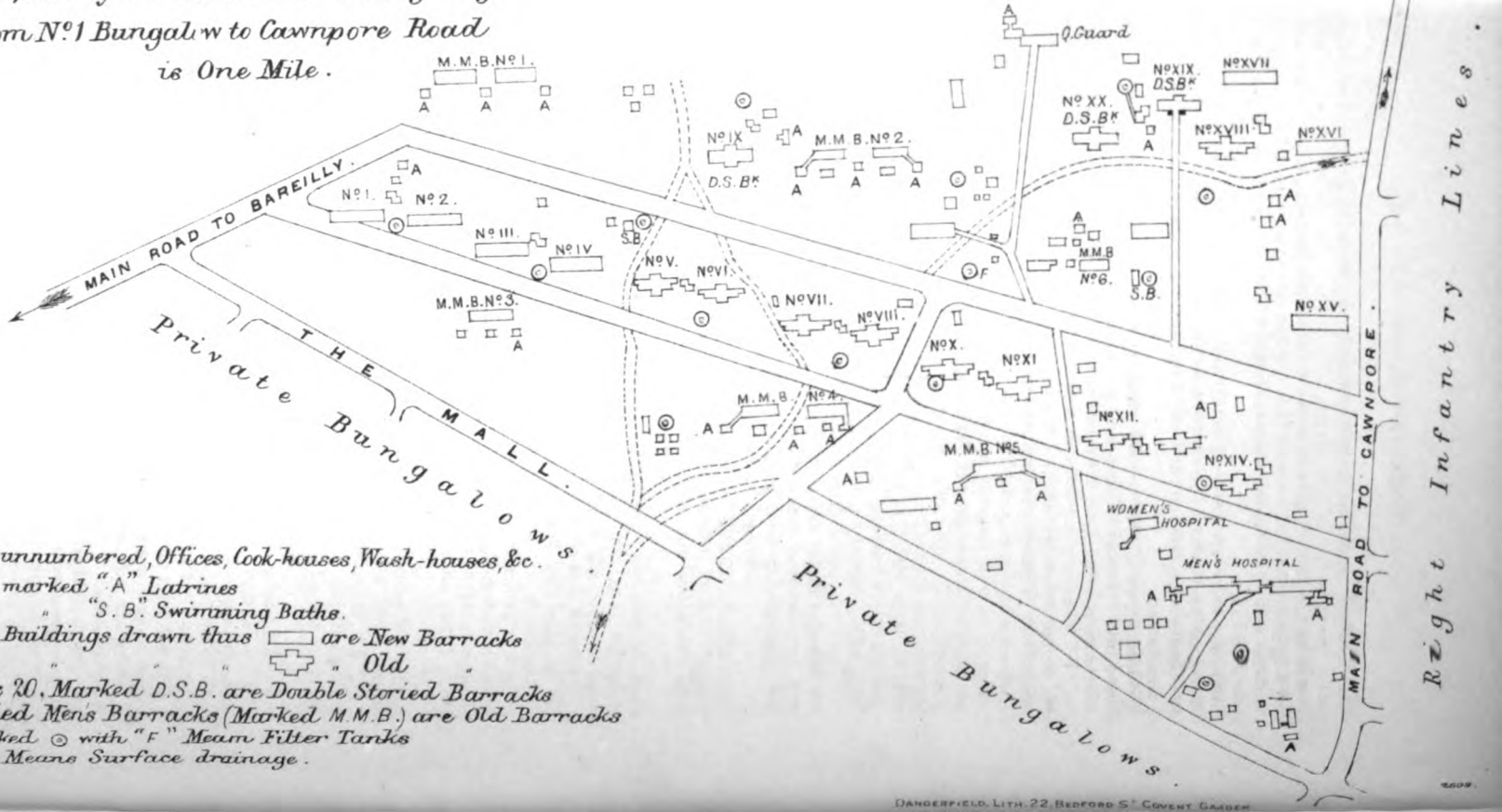
PLAN OF LEFT INFANTRY LINES.
LUCKNOW.

Occupied by 1st Battn West Riding Regt

From No 1 Bungalow to Cawnpore Road is One Mile.



Buildings unnumbered, Offices, Cook-houses, Wash-houses, &c. marked "A" Latrines
" "S.B." Swimming Baths.
Numbered Buildings drawn thus ▭ are New Barracks
" " " " ⊏ " Old "
Nos 9, 19 & 20, Marked D.S.B. are Double Storied Barracks
All Married Men's Barracks (Marked M.M.B.) are Old Barracks
Wells marked ⊙ with "F" Mean Filter Tanks
- - - - - Means Surface drainage.

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DANDERFIELD, LITH. 22, BEDFORD ST. COVENT GARDEN

No case of enteric fever had occurred in the 33rd Regiment for some months previous to the 19th March. There was a case under treatment in the hospital of the 72nd Regiment at the time, but the barracks of "F" Company, 33rd Regiment, are fully a mile from the lines occupied by the 72nd Regiment, and there was no evidence whatever that the man attacked had ever put foot in the 72nd lines.

Although there is no cause so potent and no view so natural and intelligible as that the propagation of enteric fever occurs by means of enteric poison, in the cases under consideration the view of transmission, however acceptable, cannot be maintained.

Contamination of Water.—The subject of the water supply has been fully entered into. It may be dismissed as a highly improbable source of danger.

Contamination of Air.—Reference is requested to return "A," it will be seen that "F" Company furnished seven cases out of a total of 16 treated, however, as one man belonged to the band and lived in the band bungalow, the cases in "F" Company are reduced to six.

Reference is now requested to plan of barracks and return "B."

RETURN "B," explanatory of plan of barracks.

Bungalow according to Plan.	Company.	Strength.				Enteric Fever.				Dates of Attack.
		Under One Year in India.	Under Two Years in India.	Over Two Years in India.	Total.	Under One Year in India.	Under Two Years in India.	Over Two Years in India.	Total.	
1. New 2. Do.	E.	22	9	52	83	1	—	—	1	31st July.
3. Do. 4. Do.	F.	20	25	37	82	3	—	3	6	16th March, 23rd March, 20th April, 22nd April, 7th June, 8th June.
5. Old 6. Do. 7. Do.	Drums and D.	39	6	76	121	1	1	1	3	22nd April, 18th June, 2nd August.
8. Do.	School	—	—	—	—	—	—	—	—	
9. D. S. Barrack.	Band	3	—	45	48	—	—	1	1	26th April.
10. Old 11. Do.	C.	25	32	41	98	1	—	—	1	10th June.
12. Do.	Coffee shop.	—	—	—	—	—	—	—	—	
13. Do. 14. Do.	B.	26	12	48	86	1	—	—	1	8th May.
15. New 18. Old	A.	14	13	66	93	—	—	—	—	
16. Old 17. Do.	H.	21	5	60	86	—	—	1	1	11th August.
19. D. S. Barrack 20. Do.	G.	27	4	64	95	—	1	—	1	10th May.
M. M. B. No. 1	Married men	—	—	18	18	—	—	—	—	
Do. No. 2	"	—	—	11	11	—	—	1	1	24th April.
Do. No. 3	"	—	—	3	3	—	—	—	—	
Do. No. 4	"	—	—	—	—	—	—	—	—	
Do. No. 5	"	—	—	2	2	—	—	—	—	
Do. No. 6	"	—	—	7	7	—	—	—	—	

It will be seen by the plan that there are only three latrines for the men occupying barracks 1–7, 10, and 11, of these latrines, one is used exclusively by "E" Company, and therefore there are only two latrines for the men of "F," "C," and "D" Companies, and the men of the drums, in all 301 men. Each latrine contains 16 seats, and is divided by a partition wall in the centre, making eight seats on either side. It was found on inspection at night that only one side of the latrine was lighted, so that the latrine accommodation at night for 301 men was limited to 16 seats.

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Ten of the cases of enteric fever came from these men. The man from No. 9, band bungalow, before mentioned, belonging to "F" Company would most probably spend a good deal of his time with his company and make use of the latrine for the men of that company. We may, therefore, say that 11 cases originated in men making use of the two latrines in question.

The cause of the greater prevalence of enteric fever in "F" Company has still to be ascertained. "F" Company, strength 84, with fewer men than any company in the regiment under one year's service in India, furnished 7 cases out of the 16; there is no doubt but that this company must have been exposed to some special source of danger. All the latrines are very badly ventilated, there being only three openings at either side about 6 feet from the ground, and the rest blank walls, except a small square of open brickwork a each end. The use of dry-earth was found much neglected, and in such small quantities when used, as to be utterly worthless as a deodorizer. The sweepers also omitted to remove pans which were sometimes left half full from an early hour in the evening until next morning. Before drawing any conclusion from the above facts, I wish to mention particulars of the case admitted on the 24th April from "C" Company.

Disease contracted through fœcal Decomposition.—Sergt. J. P., married, aged 30 $\frac{10}{12}$ years, 10 years' service, in India five years, lived in a block with nine other married men and families. He was in the habit of going out on moonlight nights to shoot hedgehogs, close to the ground where the hedgehogs were found the filth of the city was deposited, the smell was always bad, but one night in particular, a little rain having fallen, the air was moist and oppressive and the stench so bad as to cause vomiting and to compel the sergeant to go home, in 7 days or so he sickened, and in 10 days was in hospital, one of the worst cases of enteric fever I ever saw.

There is no doubt Sergt. J. P. was quite well when he went out shooting on the night he is supposed to have contracted enteric fever. He was beyond the susceptible age, and had spent five years in India, still the air was so laden with the products of decomposing organic matter as to produce enteric fever of extraordinary severity. This case is mentioned as one due to contamination of the air, and the reason for assigning the same causation for the greater prevalence of enteric fever in "F" Company will now be stated.

"E" and "F" Companies had the best barrack accommodation in the lines. In all respects (except latrine accommodation) likely to affect health, "F" Company lived under the same conditions as the rest of the regiment.

It has been shown that all the latrines are badly ventilated, that the use of dry earth was neglected, and that the sweepers left pans unemptied in the latrines. "F" Company latrine is the only one in the lines surrounded by trees. On still oppressive nights in the hot weather the trees, retarding radiation of heat and obstructing ventilation, kept "F" Company latrine exceedingly hot, favoured rapid fœcal decomposition, and thus contaminated the air. Soldiers never hurry out of latrines unless wanted for duty, smoke in them, contentedly breathing very foul air, and most probably thus contract disease.

Since attention was directed to this point I have been in the latrines at night, they were by no means pure, and those of "F" Company, as might be expected, least so; the state of the latrine during hot nights in April, May, and early in June must have been exceedingly impure.

All facts considered, I am of opinion that the enteric fever in the 1st Battalion West Riding Regiment during the present year was caused by contamination of air by fœcal decomposition, and that most of the enteric fever seen in India proceeds from the same source.

I believe there is no view as to causation of enteric fever in India which fits in so well to the conditions under which we live as the Pythogenic.

Filth abounds though unseen, the natives, from caste reasons, cannot attend to their own conservancy, and when sweepers are maintained at public expense their sole object is to make places *look* clean. The stench in native cities and in the back streets of bazaars frequented by soldiers attests the prevalence of filth.

After nearly 20 years in India I have never seen a case of enteric fever contracted in hospital; if the disease were due to such general causes as climate and malaria, the patients in hospital suffering from some local disease would

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not be exempt, and I believe if the conservancy of the lines were looked after with the same scrupulous attention as it is in hospitals, the prevalence of enteric fever would be considerably lessened.

Worked well, the dry earth system of conservancy is perfect, but it needs constant and intelligent supervision to prevent it becoming a source of danger.

The soldier is extremely apathetic in all sanitary matters, and without his co-operation, the willing assistance of the quartermaster and of his establishment, and the support of the officer commanding, we can make little advance in sanitation. The position of a medical officer attached to a regiment is embarrassing, the only officer who finds fault with the internal economy of the regiment. Representations of neglected conservancy, though made solely for the good of the soldier, are looked upon with disfavour when frequently made, and are resented, if not openly, at least by a passive resistance to the suggested improvements.

Sanitary defects will never be detected by routine inspection, everything looks so clean when inspections are made at stated times. The sweeper, when watched, does his duty fairly, but he finds it much easier to cover filth with a film of dust than to remove it, and that which is easiest to him is sure to be done.

Many medical officers who are now quite satisfied with the conservancy of the lines, would, I feel sure, be surprised if they inspected a few of their latrines at some unexpected hour. When defects are detected few medical officers have the inclination to come into collision with their commanding officers, and determination to represent defects till rectified will certainly end so; the position is trying, placed between the desire to do good and the disinclination to do anything which the commanding officer will most probably resent. Besides, even a commanding officer would find great difficulty in compelling his men to use dry earth, not a tithe of the dry earth necessary for efficient conservancy is used. I do not form these opinions from my limited experience of Lucknow, but from the experience of years in other places.

The latrine conservancy would, even if the soldier totally neglected the use of dry earth, be very much improved if the prompt removal of the pans and the free use of dry earth in the large receptacles could be insured, but the number of sweepers allowed by Government for a regiment is not sufficient to carry this out effectually.

To insure attention to conservancy there ought to be a sanitary officer in each large station who should be required to visit one place in each of the lines daily at unexpected hours, and who should report daily, through the Principal Medical Officer for the information of the local commanding officer, the hour and the place inspected and the condition in which it was found.

It might be fairly assumed that if one place was insanitary the others were equally so. The conservancy establishment would be always on the alert, not knowing when or where inspections would be made, and reports coming through the Senior Medical Officer in a station would receive that attention from commanding officers which would never be accorded to the reports of the medical officer attached to the regiment.

Appended is a report by Surgeon R. Exham on the treatment adopted in those cases which did occur. Any line of treatment which reduces the mortality of enteric fever in India to 13·33 per cent., which Dr. Exham's has done, is deserving of record. I can testify to the severity of some of the cases and to the marked success of the treatment in all, but I cannot say how much of the success was due to the milk treatment, and how much to the skill and to the unremitting attention to the minutest details with which the course of the disease was guided by Dr. Exham.

Assistant Apothecary McArdle carried out all instructions received from Dr. Exham with interest and intelligence. He took temperatures and noted with accuracy every change which occurred in the interval of Dr. Exham's visits, and on or off duty, was always present to report progress of the case. Dr. Exham and I appreciate Assistant Apothecary McArdle's services all the more for being so cheerfully rendered.

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Report on the Treatment of Enteric Fever in the West Riding Regiment during 1881. By Surgeon R. Exham, A.M.D.

Having been much impressed by the remarks of Dr. Bristowe on the treatment of enteric fever, published in the British Medical Journal, 27th November 1880, and, as it appeared to me that, as the poison of enteric fever is either contained in or due to decomposing animal matter, to give animal food, particularly in a climate like that of India where decomposition is rapid, might be adding fuel to the fire, I therefore determined, when I got an opportunity to put the plan of treatment recommended in the paper referred to, to a fair test. I had an opportunity of treating the last 15 cases of those under report, and of these only 2 died, which mortality, 13·33 per cent., contrasts favourably with that usually experienced in India, viz., 41·07 per cent., according to the report lately published by the Surgeon-General. Of these two deaths one occurred in a man who was in a broken down state of health from repeated attacks of ague during his five years' service in the country, and he gave way to dispondency when attacked with enteric fever, and would not make any struggle against the disease, The other case one of that rare complication of enteric fever, inflammation of the membranes of the brain.

It may be said that there was a run of mild cases, but some were certainly not mild, and I am of opinion that it was the plan of treatment adopted which made many of them run a mild course.

As, owing to the difficulty in this country of making a diagnosis early in every case of enteric, and as I was anxious to carry out the system of treatment below referred to from the very commencement of the case, the plan was adopted by putting all patients suffering from fever on admission on "milk diet."

Before I refer to the system of treatment I would like to make a few remarks on the difficulties experienced in early diagnosis of enteric fever in India.

Several patients are admitted into hospital on the same morning, they all have felt unwell for a day or two, they all have headache, perhaps they all have diarrhœa, and there is no absolute diagnostic sign to distinguish them immediately. It is only by the greatest attention to the symptoms that it is possible to distinguish in the first few days between febricula, remittent fever, and enteric.

Out of the cases admitted the remittent fever case may have diarrhœa, whereas the enteric case may be constipated, and in the early days of the latter case the temperature may be more like what it is in remittent fever than what is laid down in the books as typical of enteric. In India we must not conclude that we have not to do with enteric if we have a temperature of 105° in the first 48 hours, or indeed in the first 24 hours, after admission to hospital, for such high temperatures are often seen early in a case of enteric in this country. At the time of the year in which enteric is most common the other fevers seen in this country assume a more or less continued type, differing from the marked intermittent character of the fevers seen in the autumnal months, and therefore it often happens that a man with enteric fever has been several days in hospital before his disease is fully recognised.

It is in consequence of this difficulty in diagnosis that I recommend the plan of putting all fever cases on admission on "milk diet," otherwise I am of opinion that the full benefit of the plan of treatment below recommended will not be experienced.

Immediately on enteric fever being even suspected (this suspicion would often be entertained on admission of the case) the only part of the diet given was the milk, 2 pts. 6 oz. This was given diluted with soda water, in small quantities at a time, distributing the amount over the 24 hours, so that the patient would not get more than 4 oz. of milk at any one time. In a few days, if the patient digested the milk well, an extra pint was allowed if he seemed to require more nourishment; or if the 2 pts. 6 oz. was as much milk as he could digest, a couple of eggs, beaten up with sugar and water were given, but some patients got no food but 2 pts. 6oz. of milk until the temperature became normal. By this plan of treatment the intestines were given the minimum amount of work to do and were put in the most favourable state for the healing of the ulcers. If curds appeared in the stools lime water was substituted for the soda water, and if extra milk was being given it was

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stopped. In some cases mineral acids were given, but no marked benefit was derived from their use. In a few cases in men who had previously suffered from malarious fevers, small doses of quinine (2 grs.) were combined with the mineral acids, more as a precaution than anything else. The patient's mouth was washed out three or four times a day with lime juice mixed with water, this kept the teeth free from sordes and the mouth clean and sweet. Every patient was sponged twice daily, morning and afternoon, with vinegar and water; this kept the skin clean and soft and reduced the temperature to some extent.

Under the above plan of treatment, diarrhœa was the exception; in most cases after the first few days the diarrhœa was replaced by constipation, requiring the use of enemata to open the bowels. Purgatives in any stage of the disease were strictly forbidden and only in one case did the enemata fail to have the desired effect. In that case, during the last week of the fever, constipation was extreme and enemata failed to produce action of the bowels; it then became a question whether the constipation was to be allowed to continue or whether a purgative should be given, and the following points were discussed:—1st, he had been several days without evacuation, but there were no unpleasant symptoms produced; 2nd, temperature was gradually falling and there seemed every prospect of its becoming normal in a few days more. It was therefore decided to wait for the return to normal temperature unless any symptoms appeared which demanded the use of a purgative. The day the afternoon temperature fell to 99° he was troubled with slight diarrhœa, evidently due to the irritation of the overloaded bowel, a purgative (Ol. Ricini) was now given and enormous evacuations were produced. This man had a severe relapse, but eventually made a good recovery. In a similar case I should follow the same course and be guided by the temperature, and if there was a reasonable hope of its returning to normal in a few days I should delay the exhibition of a purgative if possible until then. When I administered the castor oil I should add a few drops of tincture of opium to prevent the oil from griping.

With regard to diarrhœa, I do not think we need interfere unless after the first few days of the fever the stools exceed 3 or 4 in the 24 hours and are excessive in quantity; then it is advisable to check them, and I found the acetate of lead and opium pill so satisfactory that I had not to make use of any other medicine to check the diarrhœa.

Now with regard to the question of stimulants. My opinion is, that as long as a patient can do without them they ought to be withheld, and I think that the best guide for their use is to give them as soon as there is muscular tremor. If, on feeling the pulse you find the tendon twitch under your finger then commence to give stimulants, begin with 2 to 4 oz. of brandy in the 24 hours, increasing it if the twitching increases while the temperature does not rise from its use. I find that out of the 15 cases, 6 had stimulants at some time or other, in one of them for only one day, as, even a small quantity of brandy producing a rise in temperature, it was not persevered with. The other 9 cases never had any stimulants and they all recovered.

There is one other point worth noticing, that is sleeplessness. As a rule we need not interfere, but if that becomes necessary, opium is our sheet anchor. Its beneficial effects were most marked in one case. The man had a severe attack of the disease and during the last few days of the fever muscular tremor became so severe as to amount to jactitation. Unless one saw the case one could not realize how for four days the patient required two attendants with him constantly to keep him from jerking himself out of bed; he was quite sensible but had no control over his muscles, which were in continual action. Bromide of potassium was tried and failed, and then at the suggestion of Brigade Surgeon Chapple, when it seemed certain that the patient must die if he did not get rest, 20 minims of tincture of opium were given and repeated in 4 hours. The first dose was given at 11 p.m. and at 10 a.m. the next morning he fell asleep and slept 19 hours out of the next 24, all muscular action ceasing as soon as he fell asleep.

To sum up:—Feed your patient on the smallest amount of milk diluted with soda water or lime water which will support life. Patients will take the milk if persuaded that it is the best thing for them, but if they have a strong antipathy to the method of treatment, a few crumbs of bread (about 2 oz. in the 24 hours) mixed with the milk appears to satisfy them and does not seem

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to do any harm. If the bowels require opening, administer enemata (soap and water), not purgatives. If curds appear in the stools give lime water and lessen the quantity of milk, substituting eggs if necessary. If diarrhœa be excessive after the first three or four days give acetate of lead and opium pills, pay strict attention to cleanliness of mouth, skin, &c. Put the patient into a large well ventilated ward, and if the weather is excessively hot put the patient's bed in front of a thermantidote. Let him be dressed in a cotton shirt, and only put a sheet over him unless the weather is cold. Sponge him twice daily with vinegar and water, Sprinkle a little carbolic acid under the bed to keep the air sweet. Give stimulants if there is any sign of nervous exhaustion; the brandy and egg mixture being the best mode of giving them. Do not be in too great a hurry to "feed up" a patient when the fever subsides. Commence with bread in the milk, eggs, &c., then chicken broth, and eventually roast chicken, puddings, &c., only returning to mutton and beef a long time after convalescence has been fully established.

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APPENDIX No. XI.

ON PALPITATION OF THE HEART IN SOLDIERS.

By Brigade-Surgeon H. VEALE, M.D., Assistant Professor of Military Medicine.

The prevalence of palpitation as one of the forms of cardiac disease in the army, and especially among the invalids sent home from abroad, attracted about 20 years ago the attention of Professor Maclean, of the Army Medical School, whose extremely valuable observations on the subject were brought to the notice of the military authorities and of the medical profession in a lecture delivered at the Royal United Service Institution in 1863, and, subsequently, in his contributions to the Army Medical Reports for 1867 and 1870. The frequent occurrence of diseases of the heart and great vessels was at that time considered attributable in great measure to the cross belts, heavy accoutrements, and tight clothing which the men used to wear, and I believe it was mainly owing to the energetic representations of Dr. Maclean and of the late Professor Parkes that the War Office Committee was appointed by whose recommendation the old form of knapsack and cross belt was abolished, and the valise equipment adopted in its stead. In the history of this reform the names of Sir Thomas Trowbridge, Colonel Carter, General Eyre, and the other members of the War Office Committee will likewise claim a prominent place, whilst more recently Surgeon-Major Oliver, Dr. Myers, of the Guards, and many other officers, military as well as medical, have added much to our information concerning this important subject.

The valise equipment has now been in use for 10 or 12 years, and it would doubtless be interesting if we could ascertain whether the cases of palpitation have undergone any decrease since its introduction, and, if so, to what extent. This, however, cannot be done, because the statistical reports which have been published since 1873 give the diseases of the circulatory system only *en masse*, and there are, consequently, no data for determining in what proportion the minor or the graver ailments of this class contribute to the general total. Still there are grounds for believing that cases of "palpitation" continue to be of very frequent occurrence in the army, and medical officers are aware that few diseases are more troublesome as regards either prevention, prognosis, or treatment. For this reason I have thought it desirable to continue the inquiry as to the mode of production of the ailment designated "palpitation," and to ascertain, if possible, the physical condition of the cardio-vascular system included under that term. Having this object in view, I have during the last two years taken as opportunity offered, and without any special selection, a hundred of the patients who had been invalided for palpitation, and have examined them minutely according to a previously arranged scheme, noting the antecedents both remote and immediate, the general symptoms, the physical signs, and the probable causes of the disorder, and concluding each examination with such a statement of the actual condition of the heart as a consideration of all the circumstances seemed to warrant. In the performance of this task, and especially in taking the pulse tracings with the sphygmograph, I have received much assistance from the junior medical officers attending the Army Medical School, and I am glad to state that their conclusions, although often arrived at independently, have nearly always been in close accordance with my own.

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The following is a summary of the facts so elicited :—

1. *Antecedents as to previous Occupation.*—

On inquiring as to the occupations of the men prior to enlistment, it was found that—

Labourers { General - 20 / Farm - 10 / Bricklayers 8 }	- - -	furnished	38 cases.
Iron workers - - - - -		„	10 „
Servants - - - - -		„	9 „
Tailors and shoemakers - - -		„	9 „
Miners - - - - - -		„	8 „
Other artisans of various classes - -		„	18 „
Clerks, students, and others - - -		„	8 „
	Total - -		100 „

2. *Antecedents as to Age.*—

Of the age under 20 - - - -		there were	2 cases.
„ 20 and under 25 - - -		„	54 „
„ 25 „ 30 - - -		„	34 „
„ 30 „ 35 - - -		„	6 „
„ 35 „ 40 - - -		„	3 „
„ 40 and upwards - - -		„	1 „

These figures, making allowance for the comparatively small number of cases, appear to be nearly proportionate to the number of men serving at the different ages.

3. *Antecedents of Service.*—The total service of the patients had been—

Under 2 years - - - - -	in	8 cases.
2 years and under 4 years - - -	„	32 „
4 „ „ 6 „ - - -	„	44 „
6 „ „ 8 „ - - -	„	6 „
8 „ and upwards - - - -	„	10 „
Total - -		100 „

This service had been partly at home and partly abroad, and the home service had been—

Under 2 years - - - - -	in	59 cases.
2 years and under 4 years - - -	„	30 „
4 „ and upwards - - - -	„	11 „
Total - -		100 „

The foreign service had been as follows: within the tropics, in Northern India, and in Afghanistan :—

Under 2 years - - - - -	in	14 cases.
2 years and under 4 years - - -	„	43 „
4 „ „ 6 „ - - -	„	11 „
6 „ and upwards - - - -	„	6 „
Total - -		74

In sub-tropical climates, chiefly the Mediterranean and South Africa—

Under 2 years - - - - -	in	25 cases.
2 years and under 4 years - - -	„	9 „
Over 4 years - - - - -	„	2 „
Total - -		36 „

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In some instances the men had served in both tropical and sub-tropical stations, but only one was noted as having served in Canada.

4. *As to the Arms of the Service.*—It may also be mentioned that 93 of the cases were furnished by the infantry, 5 by the cavalry, and 2 by the Royal Engineers. The artillery did not come under my observation at this time, but I have sufficient grounds for saying that palpitation occurs quite as frequently in that arm of the service as in any other.

5. *Antecedents of Locality.*—Sixty of the cases began in India; 24 in South Africa; 8 at home; 4 in the Mediterranean; and 4 at other stations. Of course these figures are too small to be of much statistical value; still, bearing in mind that the strength of the army in India, although less than that of the home army, is about five times greater than the force in the Mediterranean, the conclusion seems probable that palpitation is more frequently developed in the former country than in either of the latter. It may also be inferred from the fact of the strength in South Africa during the time when these observations were made having been upwards of 12,000, that the disease is of very frequent production in this quarter also.

6. *Antecedents as to the Use of Alcoholic Drinks.*—There is a very general opinion in this country that soldiers drink more than men of a similar grade in civil life, but I am inclined to think that if there is any difference in favour of the civilian it is only very small. Nevertheless, of the 100 cases now under consideration 38 were classed as intemperate; but I must explain that the arbitrary rule was adopted of regarding as intemperate all those whose average daily consumption, in the form either of beer or spirits or both, exceeded two ounces of absolute alcohol. Consequently, all those were classed as intemperate who acknowledged that when in India they drank their full allowance of two pints of beer and a gill of rum per diem, notwithstanding that several of them declared they had very rarely been actually drunk, or even the worse for liquor, according to the soldiers' interpretation of that phrase.

7. *Antecedents as to the use of Tobacco.*—Thirteen of the 100 men stated that they had never learnt to smoke; but two of the 13 used formerly to chew tobacco, although they had relinquished the habit. All the others were smokers.

The ages at which they began to smoke were as follows:—

At 8 years of age - - - - - -	1
„ 9 „ „ - - - - - -	1
„ 12 „ and under 14 - - - - -	5
„ 14 „ „ 16 - - - - -	9
„ 16 „ „ 18 - - - - -	18
„ 18 „ „ 20 - - - - -	31
„ 20 „ „ 22 - - - - -	16
„ 22 and upwards - - - - - -	6
Total - - -	87

With regard to the quantity smoked, 54 men said they smoked less than two ounces a week; 30 said they smoked from two to three ounces a week, and two confessed that their consumption was from four to five ounces a week.

As to the kind of tobacco made use of, 10 per cent. of the smokers used bird's eye or shag, and the remainder smoked the cheap material known as "twist," "stick," or "cake."

8. *Antecedents as to Diseases.*—Among the remote antecedents rheumatism was noted in 13 cases; but as an immediate antecedent it did not occur in a single case. Fever, chiefly malarial, was noted in 54 of the cases; syphilis in 10 cases; bronchitis in 2 cases; and sunstroke in 1 case.

9. *Other immediate Antecedents.*—Marching, on active service for the most part, was noted in 43 cases; over-strain, other than in marching, in 10 cases; and fright in action or on service in 6 cases.

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Of course it will be understood that in some instances more than one of these antecedents had occurred in the same individual.

These were all the facts elicited with respect to the antecedents of palpitation that admit of being stated numerically. I shall now give in a similar manner the symptoms complained of by the patients; after which I shall record the physical signs obtained, and the results deducible therefrom.

Symptoms.—1. *Pain.*—Uneasiness, discomfort, or pain more or less severe, was complained of in the cardiac area in 64 cases; around the base of the left chest in 4 cases; at the epigastrium in 2 cases; and between the scapulæ in 2 cases. In the remaining 28 cases pain was not complained of at all when the patient was examined.

2. *Dyspnœa.*—In no case was there any true dyspnœa; but shortness of breath or *besoin de respirer* was noted in 70 of the cases. In 18 cases this symptom was absent at the time of the examination; and in the remainder, owing to an oversight, no record was made as to whether it existed or not.

3. *Vertigo.*—Giddiness or dizziness was noted in 65 cases, but was not present in the remaining 45 at the time of the examination.

4. *Sleep.* The sleep was noted as indifferent and disturbed by dreams, nightmare, and the like, in 53 cases. Among the remainder no complaint was made in this respect.

5. *Nervousness.*—Many of these patients became agitated and tremulous under excitement, and in six of the cases this instability and tremulousness was very marked.

Physical Signs.—1. *Pulse.*—In 79 cases the pulse was regular at the time of examination; in the remainder it was irregular. As to frequency, it was between 60 and 80 per minute in 10 cases; between 80 and 100 in 40 cases; between 100 and 120 in 36 cases; and between 120 and 140 in 14 cases. These figures express its frequency when the patients were in repose; but after exertion or excitement, even in the smallest degree, the pulse usually underwent a truly wonderful increase. Thus it appears that in fully nine tenths of these cases the frequency of the pulse was considerably above the normal standard. As a general rule also the pulse was weak and of low tension, giving to the sphygmographic tracing a rather high percussion stroke and increased dicrotism.

2. *Cardiac Impulse.*—The apex beat was visible in 64 cases, invisible in 28 cases, and neither visible nor palpable in 8 cases. Its maximum, from above downwards, was at the fourth interspace in 11 cases; at the fifth rib in 1 case; at the fifth interspace in 75 cases; at the sixth rib in 1 case; at the sixth interspace in 4 cases; and indefinite to sight or touch in 8 cases. Transversely, *i.e.*, from right to left, the maximum impulse was at the parasternal line in 8 cases; immediately to the left of this line in 16 cases; midway between the parasternal and nipple lines in 30 cases; immediately to the right of the nipple line in 23 cases; in the nipple line in 13 cases; external to the nipple line in 2 cases: and indefinite in 8 cases. In 6 cases there was epigastric pulsation.

3. *Area of Cardiac dulness.*—This was estimated by the results of moderately strong percussion from above downwards in the left parasternal line, and, transversely, on the fourth rib or a little below it. The commencement of vertical dulness was noted at the second rib in one case; at the third rib in 34 cases; at the third interspace in 24 cases; at the fourth rib in 22 cases; and below the fourth rib in 7 cases. In 12 cases the exact level at which the vertical dulness began was not specified. The *transverse* dulness was found to be 1 inch or under in 36 cases; from 1 to 2 inches in 22 cases; from 2 to 3 inches in 17 cases; and exceeding 3 inches in 4 cases. In the remaining 21 cases the dulness was noted as increased, but the precise measurement was not specified. In 14 of the cases the dulness extended to the mesial line.

4. *Character of the Cardiac Sounds.*—The following is an analysis of the results obtained by auscultation :—

Both sounds were considered normal in	- - -	38 cases.
The first sound alone was abnormal in	- - -	19 „
The second sound alone was abnormal in	- - -	15 „
Both sounds were abnormal in	- - - -	28 „

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The abnormality of the first sound was attributable to:—

Indistinctness in	9 cases.
Shortness or sharpness in	8 „
Roughness, with or without bruit in	7 „
Reduplication „ „	6 „
Prolongation „ „	5 „
Bruit alone in	12 „

The abnormality of the second sound was attributable to:—

Accentuation of the aortic second alone in	7 cases.
„ of the pulmonary second alone in	20 „
„ of both aortic and pulmonary second in	9 „
Indistinctness of aortic and pulmonary second in	4 „
Reduplication in	3 „

The bruits were presystolic in 4 cases, systolic in the mitral area in 8 cases, and systolic in the pulmonary area in 8 cases.

Diagnosis.—The conclusions arrived at with regard to these cases were that there was abnormality at the mitral orifice, *without* marked hypertrophy or dilatation, in three instances; that there was abnormality of the mitral orifice *with* ventricular dilatation, and either with or without compensating hypertrophy in 6 cases; that there was dilatation without compensating hypertrophy in 48 cases, in 2 of which there was probably dilatation or aneurism of the arch of the aorta; that there was dilatation with hypertrophy in 19 cases; and that in 24 cases there was no positive evidence from auscultation or percussion *per se* of either dilatation or hypertrophy.

Etiology.—I now subjoin a summary of the causes which were assigned by the patients, as well as of those which were ascertained or deemed most probable by myself. These causes are given in the order of their frequency, but it is to be understood that two or more were often associated in one case. For example, in the case of *A.B.* the disorder was caused by bronchitis, intemperance, and fever; in the case of *C.D.* it was caused by hepatic disease, intemperance, and fever; and so on. In 12 of the cases nothing definite regarding the causation could be elicited.

SUMMARY OF CAUSES.

Assigned by the Patients.		Ascertained or deemed most probable.	
Injury	1	Injury	2
Drink	1	Emphysema	3
Tobacco	1	Incipient phthisis	3
Bronchitis	3	Syphilis	4
Playing wind instruments	5	Playing wind instruments	5
Uniform, straps, and belts	9	Hepatic disorder	5
Hardships on active service	11	Anæmia	5
Heat of climate	12	Physical incapacity	6
Fever	20	Bronchitis	6
Exertion generally	24	Uniform, straps, belts, &c.	8
Marching on active service	24	Hardships on active service	10
		Excessive smoking	15
Doubtful or none	22	Exertion generally	18
		Marching on active service	18
		Heat of climate	21
		Intemperance	22
		Fever, chiefly malarial	26
		Uncertain	12

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With regard to the diagnosis that was made in these cases by the medical officers who sent them home, it is only fair to suppose that the signs of organic change were at first either absent or indefinite, and that the state of the heart was, according to current opinions, fairly well expressed by the term palpitation. In the course of some months, however, both the morbid conditions and the correlative physical signs underwent such development in most of the cases as to render a more definite diagnosis comparatively easy, and subsequent examination showed that dilatation was by far the most frequent lesion underlying the symptoms. In fact, this condition was found certainly present in two thirds of the cases, and there were good reasons to suspect its existence to a small degree in the remainder. But it does not follow that palpitation *per se* is to be regarded as a cause of dilatation. The facts seem rather to indicate that palpitation in soldiers is generally a result and sign of a dilating process which has begun, and is progressing either subsequently to hypertrophy or independently of it and without it, or without a sufficiency of it. Very few, if any, of the cases answer to the description of the neurosal form of palpitation, with the exception, perhaps, of those which are induced by excessive smoking. The patients are often not anæmic, they eat well, and appear to digest well, yet on the least exertion, such as running or mounting stairs, the heart beats with extraordinary rapidity.

It must always be a difficult matter to prove the existence of a small amount of dilatation. It is conceivable that a heart may be considerably dilated whilst its maximum impulse remains still to the right of the nipple line and its transverse dulness is less than two inches. In such a case we may be unable to discover at what point the apex lay prior to the commencement of the symptoms, or what was the original extent of the transverse dulness, and without that knowledge the possibility of dilatation having occurred can scarcely be denied if the general symptoms of this disorder are present. But it would almost seem that there is a reluctance among medical men to assert that a patient is suffering from dilatation of the heart unless the physical signs are so considerable as to indicate an already advanced stage of the affection. Professor Fraentzel, of Berlin, however, maintains* that dilatation may be diagnosed not only when the physical signs are present which are given in the text books, but even when the cardiac dulness is of normal dimensions in a wide thorax, or when any dulness at all over the cardiac region can be found in a barrel-shaped chest. He also says that if the percussion note over the body of the sternum is duller that over the manubrium, dilatation of the right ventricle or auricle, generally of the former, may be diagnosed. It is evident that if we are to accept this dictum, we ought to reconsider both the physical and general signs of cardiac dilatation, and to recognise this affection as being much more frequent than it has hitherto been supposed to be.

I am not as yet in possession of the data for determining whether among soldiers dilatation of the right or of the left side of the heart is the more common. My *impression* has been that the right ventricle is more frequently affected than the left, judging from the cases in which there was substernal dulness and accentuation of the pulmonary second, and this is in accordance with the conclusion arrived at by Professor Maclean; but, on the other hand, looking at the frequency with which fugitive systolic murmurs in the mitral and pulmonary areas are heard in these cases, and the common occurrence of more or less displacement of the apex towards the left, it is evident that the excess of right sided over left sided dilatation cannot be very great. Probably, in the majority of cases, both sides are affected.

It would be difficult to conceive any set of causes more likely to produce cardiac dilatation than those given in the foregoing summary, and it has been shown that the sufferers do not come from any particular class of the community, but that those who had been accustomed to manual labour in the open air suffered equally with those whose occupations had been of a more sedentary kind. It occurs also at any age, and in any arm of the service, but, contrary to what might have been anticipated, it is seldom a consequence of acute rheumatism. This fact, which has also been noticed by Professor

* London Med. Record, from Berl. Klin. Woch., Feb. 1881 (Dr. James Anderson).

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Maclean, may perhaps be explained by the circumstance that rheumatism affects the endocardium and pericardium both more frequently and more severely than the muscular structure, and that it is usually the latter which is chiefly concerned in the production of palpitation and dilatation.

It does not appear that the pressure of the valise or of the belts whereby the bayonet and ammunition are suspended now occupies a prominent place among the causes of palpitation, although its influence cannot be altogether excluded. Formerly it was very different, as all old soldiers acknowledge. The valise, however, was seldom carried by the troops in India and South Africa. At home it is worn perhaps still too frequently, and often so low that its weight is not supported on the sacrum. The side strap is also made and worn too short as a general rule, with the result that the shoulder straps are drawn too far back under the axillæ, where they compress the vessels and impede the free play of the arm at the shoulder joint. The attention of military officers might with advantage be given to this matter, because in nearly all the illustrations that are published to show the fitting of the valise equipment, these faulty positions of the side and shoulder straps are repeated.

The influence of tobacco in weakening the heart and rendering it liable to palpitation appears to be very decided. On this point I may venture to state that I have no personal bias against tobacco, having myself been accustomed to smoke more or less for the last 30 years or more. Its use in moderation probably does no harm, but its abuse is a potent factor in maintaining and aggravating the disorder, under whatever circumstances it may have originated. As to the objection that the Germans, French, Spaniards, and others smoke as much as our men, or even more, it may be answered that if they suffer less (which, however, has not been proved), they at any rate smoke lighter and better tobacco. But even if this be not allowed, it has still to be remembered that they do not also drink to the same extent as our men or undergo the same amount of tropical or sub-tropical service. The evil effects of tobacco smoking do not appear to depend by any means exclusively on the quantity of nicotine contained in the tobacco. There are many men who could smoke with impunity such strong tobacco as bird's eye or shag, but who would be rendered sick and faint by a single pipe of such "villainous stuff" as is used by our soldiers. This material, which is sold in every canteen, and is sometimes served out on board ship and elsewhere almost semi-officially, when smoked in clay pipes early in the morning and on an empty stomach, would nauseate any French soldier who had never smoked a stronger or, rather, a more vitiated article than *caporal*, and the only wonder is that our men stand it so well. It would, perhaps, be difficult to prove that soldiers smoke more then civilians, but nearly all those whom I have questioned on the subject have said that their consumption of tobacco was much larger after enlistment than before, the reason being that they had so much more idle time in the service. The soldier loves his pipe, and its value as a "carebreaker" may be, and I daresay is, very great; much caution would therefore be needed in any attempt to curtail this luxury, but in the meantime it would certainly be good economy on the part of the Government to insist that such a deleterious substance as the "twist" or "stick" tobacco should never be sold in canteens or issued to the troops on board ship or in the field. A cheap tobacco like the *caporal* might surely be provided in its stead, and the use of the cigar and cigarette might be encouraged in lieu of the pipe. But whilst the use of bad tobacco is objectionable anywhere, it is vastly more so in hot climates. Tobacco seems to impede the function of the liver and to diminish the secretion of bile in most persons, although its action in this respect is counterbalanced in many by its influence upon the muscular coat of the intestine, which it stimulates to contraction and movement. In this way it becomes an aperient, but when this result does not follow, or is not required, its use is always apt to be injurious to Europeans in hot climates.

With regard to the action of alcoholic drinks upon the muscular structure of the heart, it is doubtful whether the evil produced is a direct consequence of the presence of alcohol in the blood or whether it is secondary to degenerations in the stomach, liver, kidneys, and other organs; but it is acknowledged that the general effect of chronic alcoholism is to make a man prematurely old. In the early stages of this disorder, palpitation, dyspnœa, increased frequency

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of the pulse, tremulousness, and vertigo are extremely common; whilst, in the later, there is nearly always granular fatty degeneration of the muscular fibres of the heart and dilatation of its cavities. As far as hot climates are concerned, the teetotallers have scarcely exaggerated the injurious effects of alcohol, and I believe no "cry" was ever more fallacious than that which advocated the use of malt liquor for our troops in India. The porter drunk in that country necessarily contains a large per-centage of alcohol in order that it may stand the climate. This is not likely to be less than 5 per cent., and at that rate a quart of beer would be a full allowance for a man taking active exercise in the open air even in this country. It would, therefore, be far too much for any one in India; nevertheless, what is called the "regulation allowance," and which, therefore, the soldier thinks it is quite safe for him to take, comprises not only this quantity of malt liquor, but a gill of 24 per cent. arrack in addition. It may be that soldiers do not drink a larger quantity than men of similar grade in civil life, but even so, the injurious effects are greater owing to the conditions of climate, &c. to which they are exposed.

The influence of over exertion and of exposure to the extremes of climatic vicissitudes in producing palpitation and dilatation is likewise very great. As regards over exertion, the experiments and observations of M. Sassecky* are of the greatest interest. This gentleman relates that out of a litter of four young cats, two were daily hunted round a large room for one and a half to two hours for half a year, when all were killed. The body weight of the two which had been hunted had increased much less than that of the others; their hearts were 0·2 to 0·36 of an inch longer, but scarcely broader, and weighed about 0·64 per cent. less, the wall of the right ventricle was about half a millimètre to a millimètre thicker; that of the left on the contrary about 1·5 millimètre (0·06 inch) thinner; the auricular walls were in a similar state, the muscular fibres of the left auricle and ventricle were, on the average, smaller than those on the right side, and the aorta was dilated. M. Sassecky concluded that on the left side atrophy had succeeded to the primary hypertrophy, that the right side had then undergone hypertrophy, but that atrophy had not commenced there up to the time when the cats were killed.

There were here all the elements for the disorder which in a soldier would betray itself as palpitation, and we can scarcely doubt that the hearts of young soldiers are liable to undergo similar changes, especially on a compaign, for it must be remembered that over exertion does not then act singly, but that its effect is intensified by being associated with other conditions unfavourable to health. For example, a man accustomed to drink, not perhaps to excess, but to the outer limit of his capacity, and who also smokes to the same degree may possibly bear a little over exertion with impunity, but if the over exertion be severe or long continued, or if at the same time he be exposed to wet, to great heat, or to loss of sleep, or if his food be of bad quality, indifferently cooked, and taken at unusual and irregular hours, he will almost certainly break down. In addition to this it should be borne in mind that the soldier's work is not habitually hard, but that it is liable to become extremely so when he is marched out for a field day under a blazing sun either at home or abroad, and still more whenever he goes to encounter the enemy. It is not surprising that on such occasions his heart sometimes yields under the strain, and that it undergoes a more or less considerable dilatation.

The *modus operandi* of a high external temperature appears to be of a rather complex and indirect nature. In the first place, by lessening the consumption of food and increasing that of water, it must alter and perhaps diminish the assimilative activity of the tissues, and there is always danger to organic integrity in such a change. Secondly, by diminishing the proportion of hæmoglobin in the blood (for all Europeans become more or less blanched in hot countries) the tissues are less freely supplied with oxygen, and the muscles, including that of the heart, become weaker. Thirdly, it causes increased fulness of the veins and capillaries as well as an overloaded state of the right side of the heart, whilst, on the other hand, there is a general diminution of the arterial tension with a tendency to weak action of the left ventricle, the

* London Medical Record, April 1881, Dr. R. Saundby.

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result of such diminished tone in the arteries being analogous to that produced by the warm bath or by loss of blood. Fourthly, there is, or there probably would be if it were not interfered with, a diminution of the heat producing functions and an increased activity of those which reduce heat, and especially of the skin. The latter change ought, however, to be wholly beneficial, but how rarely is it permitted to have free play among our countrymen in hot climates! Whilst the natives of India and even of Southern Africa wear either very little clothing or none at all, our soldiers when serving in these countries generally wear flannel shirts, and, as if that were not enough to lessen their power of preserving their normal temperature, they are required to wear round the body two other folds of flannel in the form of a belt, which, from being supposed to be possessed of anti-choleraic virtues, is denominated a "cholera belt." No native of India would dream of wearing flannel next the skin, but the British soldier, who has been born and bred in a cold country, is led to believe that his cholera belt will protect him not only from cholera but also from dysentery, fever, and sunstroke. The result is that he often exceeds what the regulations require, and some soldiers have been known to wear as many as nine folds of flannel round the body, and even to envelop themselves in jackets of spongiopiline.

This extraordinary but very general delusion respecting the advantages of flannel underclothing is not very old. It began to take its present form towards the close of the last century, at which time Robert Jackson, whom the late Dr. Parkes considered one of the most philosophical army surgeons that ever lived, protested most earnestly against it. I have been informed by some good observers of the last generation that the use of flannel became much more general after the epidemic of cholera in 1831–1832, and it is within our own memory that during and after the Crimean war almost every young man in this country took to wearing it. At the present time there are but few of our medical men who do not advocate its use. Nevertheless, at the hazard of being deemed singular, I must express the conviction that flannel underclothing is proper only for those who are naturally delicate and infirm, or who have become so through age or disease. The wearing of flannel has never been found to protect soldiers from any of the tropical diseases; it more probably predisposes to several of them, and especially to diseases of the circulatory system. There is a saying current among the New Zealanders that they never suffered from rheumatism before they began to use the white man's blankets, and "old Indians" are often heard to maintain that they felt the cold less during the first winter than during the second after their return to this country. This might seem at first to be one of those paradoxical statements which please certain minds, but longer experience and observation would show that it expresses a truth, and that it is an evidence of the indifference of the body to changes of external temperature which is generated by the habit of wearing very little clothing and that of the lightest kind. It is possible that the greater power of withstanding extreme cold during Napoleon's retreat from Moscow which was evinced by those soldiers of his army who were natives of the south of Europe may admit of a similar explanation; for it is frequently observed in India as well as in South Africa that the natives, with bare legs and feet, and having only a few loose folds of calico round the body, not only bear the heat better (for that is what we might naturally expect), but that they often endure with impunity the piercingly cold winds and nights of those countries when our soldiers, although enveloped in flannel and other warm clothing, are prostrated by them. Again, it should be remembered that the blue coat boys, who never wear caps, are quite able to dispense with such a covering, and that their hair seems to grow all the stronger for the exposure; that our seamen do not suffer from having their throats bare; that the Scotch highlanders wearing the kilt were not, and are not more susceptible to rheumatism than the lowlanders wearing trousers; and that the lower classes in Scotland and Ireland who go about with bare feet and legs appear to be less sensitive to extremes of temperature than those who wear shoes and stockings. The late Mr. Syme used to say that those who suffered from cold feet ought never to wear woollen socks, and we see every day that seamen, fishermen, agricultural and other outdoor labourers are well able to dispense with gloves at any season of the year. The influence of flannel underclothing in rendering

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the skin over sensitive has also found expression in some popular opinions. For instance, nurses used to say it was "weakening" to change a flannel undergarment too often, and some of them considered it "unlucky" to do so. Then again the agricultural labourers are often obliged to discontinue the wearing of flannel shirts in the harvest season because it prevents them from doing the amount of work which, with cotton shirts, they find quite within their powers. Now if this be the case in the summer heat of this country, what must be the effect of wearing flannel upon our soldiers in tropical and sub-tropical climates? Ought we to wonder that, encased in such clothing, they are unable to endure long marches, that they are so sensitive to changes of temperature, or that they fall victims to ardent fever, sunstroke, and cardiac failure? Ought we not rather to open our eyes to the fact that "the excessive "care which fosters a condition of body easily susceptible of impressions from "external causes is more injurious to the health of an army than habitual "exposure to the action of the noxious causes which present themselves in the "ordinary course of military life." (Robert Jackson.)

I now come to the most common of all the causes of palpitation and dilatation of the heart, viz., fever. The effect of malarial and of simple continued fever (whatever the latter may be) upon the muscular structure of the heart is not yet thoroughly known, probably owing to the rarity of the opportunities for a complete post mortem examination of the morbid changes. But the coarse anatomical appearances in these diseases, as well as in the peculiar fever which is so frequently, but probably not exclusively, contracted in Gibraltar and Malta, are very similar to those observed in enteric, typhus, and some other fevers—the muscular tissue being soft, flaccid, and of a somewhat yellowish colour. In the fevers last named this alteration is due to granular, albuminoid, and fatty degeneration of the muscular fibres, and it is probable that in the other fevers when severe, frequently repeated, or long continued, similar changes ensue, for the albuminoid degeneration is believed to be due not merely to the influence of the fever poison but also to the prolonged elevation of the body temperature. Indeed, it is more than probable that this change may sometimes occur very rapidly, for Wagner* found it in the heart of a previously healthy girl who died six hours after extensive burns. Whenever therefore after one or more attacks of malarial, continued, or other fever a patient becomes liable to frequent attacks of palpitation, we may fairly presume that it is owing to an alteration of structure in the cardiac muscle, and that although palpitation is the outward sign, dilatation to a greater or less extent is the underlying lesion. In many cases of this kind the dilatation may be diagnosed by the ordinary physical signs during the continuance of the fever, but more frequently, perhaps, it is either not found or not sought for. As a general rule, such dilatations undergo a spontaneous cure, but the physician must have had either small experience or limited powers of observation who cannot call to mind many instances of permanent weakening of the heart after fever. If this view of the matter be accepted, it is evident that great care ought to be taken of soldiers during their convalescence from fever of any kind, and that they ought to be exempted from all the ordinary drills and exercises for several weeks after their discharge from hospital. Professor Aitken has laid down the excellent rule that no man ought to be considered fit for work for three or four months after a severe attack of enteric fever, but the value of this rule seems to be recognised more in theory than in practice, and it is the patients themselves that are usually the most clamorous for its infringement. Soldiers dislike confinement during their convalescence, and they will say almost anything to escape from the monotony and restraint of the hospital. Hence they often return to duty before they are fit for it, and continue to perform it long after they ought to have been in hospital. There are no doubt many weighty objections to a "convalescent list" of men idling about the barracks and the canteen, but they would seem to be more than counterbalanced on the one hand by the disadvantages attending the confinement to hospital of men who are "neither ill nor well," and especially of those who are convalescent from fever, and on the other by the positive danger of sending such patients prematurely to ordinary duty.

* Flint. Principles and Practice of Medicine. 5th edition.

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With respect to the prognosis and treatment of palpitation and dilatation, I have nothing to add to what was so well said by Professor Maclean in his papers in the Army Medical Reports already referred to. A few of these patients after prolonged rest and judicious hospital treatment may perhaps be sent back to the ranks, but they seldom recover thoroughly. Under any extraordinary excitement or exertion the compensating hypertrophy which had taken place yields once more, and the symptoms return with increased severity. Sometimes valvular imperfection or aortic disease is established. In not a few cases pulmonary complications ensue, and repeated attacks of bronchitis ultimately render the patient quite unfit for military service.

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APPENDIX No. XII.

OBSERVATIONS ON A CASE OF "FRACTURED FEMUR AND EMBOLUS" IN A GUNNER, ROYAL ARTILLERY, AT HALIFAX, NOVA SCOTIA.

By WILLIAM AITKEN, M.D., F.R.S., &c., Professor of Pathology, Army Medical School, Netley.

(The particulars in this case are taken from a report by Surgeon-Major W. S. Oliver, M.D.).

The facts of this very interesting case as stated in the Abstract appear to be that a man 29 years of age sustained a compound oblique fracture of the left femur, about the junction of its middle and lower third. It happened that while in the act of taking off his long winter boots previous to going to bed in his barrack room, he had brought his left foot over his right knee and while in this position, and while grasping the foot at the toe and heel and pulling forcibly on the boot, he felt something snap; and releasing his hold the leg fell down and he was unable to move it. He was carried to the hospital on a stretcher, where it was found that about three or four inches above the external condyle a small punctured wound in the integument existed, caused by the lower end of the upper fragment of bone. From this wound arterial blood oozed out freely. The man was sober and complained of no pain. When hæmorrhage had ceased, the limb was adjusted on suitable appliances. The vitality of the limb is stated to have been always "below par."

On the ninth day after the fracture he suddenly fainted, but shortly rallied and said that he felt all right again; and on the following morning (the Abstract states) it appeared evident that thrombosis was taking place, and in a few hours afterwards he suddenly expired.

The man had nine years service, with a history of primary syphilis but no secondary results. It is also important to note that five years before the fatal fracture of the femur, "while moving heavy guns a pair of heavy shears fell "over his left thigh and body," and that since then he occasionally suffered pain in the limb. The reporter justly notes that this is probably the "predisposing cause" of the fracture, for the vitality and sensibility of the left thigh were apparently much diminished, judging from the little pain produced by the fracture of the limb.

It is to be regretted that the femur of the right thigh (the uninjured one) was not removed at the same time with the left one, and subjected to the same process, in order that the condition of the fractured and otherwise injured bone might have been compared with the one which had not been injured.

There was sufficient evidence, however, that the fractured bone had undergone and was, at the time of the fatal injury, still going through serious changes since its injury five years previously. The evidence was:—

(1.) The specific gravity being carefully taken, it was found to be 1·39. The normal specific gravity of bone varies from 1·87 to 1·97.

(2.) The surface of the broken femur was covered to a considerable extent by a very delicate lace-like osseous fibre, not continuous over it, but more developed in some places than it was in others.

This growth was especially expressed near the linea aspera and its diverging lines. It was so delicate as to be easily removed even by a soft hair brush in some parts, in others it was firmly adhered. These morbid appearances in the bone, combined with the abiding pain and other symptoms following the concussion the femur received five years previously, sufficiently testify that the femur had undergone changes of a slow and subacute inflammatory kind which impaired its vitality and rendered it more easily liable to fracture than it otherwise would have been. A condition of "fragilitas osseum" had been established.

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The portions of bone had undergone some process of imperfect maceration which removed the periosteum, and disclosed appearances which showed that the bone was undergoing more or less active and slow morbid changes. In the hollow a little above the level of the internal condyle posteriorly an excavation existed about the size of a large bean surrounded with hypertrophic growth of bone. The nutrient orifices of the blood vessels were also enlarged, and the shaft generally appeared thin as compared with the large articular ends.

With regard to the other post mortem appearances mentioned, the condition of the heart at once claims notice. It is noted that its "muscular structure " was soft, pale, and very friable." "All the valves were healthy." The condition here described is that of fatty degeneration of the heart, a condition which sufficiently accounts for the sudden faint on the 10th and for the fatal fainting on the following day. It has now been often noticed that there is a tendency to sudden death by syncope after any severe injury in cases complicated by fatty heart. The deaths of some distinguished men have taken place in this way; and so have probably caused more attention to be paid to the point. The cases may be mentioned of Dr. Pereira, a distinguished physician who thus died during the course of treatment of a ruptured tendo achillis; of Sir Cresswell Cresswell, an eminent judge, who died by syncope while being treated for a fractured patella. But the diagnosis of a fatally degenerate heart is by no means easy, a morbid condition also which would scarcely be expected in so young a man.

With regard to the clot or coagulum entangled in the posterior wall of the tricuspid valve (about half an inch by an inch in size, and fibro-granular in appearance) there is no evidence of thrombosis, or that this clot was formed elsewhere than the place where it was found. They are very commonly found in this place in cases where death is slow, as in this instance. When received this clot had become dry, the bottle having been broken *in transit* in which it had been placed.

Netley, 19th May 1881.

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APPENDIX

Annual Abstract of Meteorological Observations taken

NETLEY. Lat. 50° 51′ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Hourly Means. 9 p.m.	Daily Means. Simple.	Daily Means. Reduced.	Means of Min.	Means of Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Minimum.	Relative Humidity. Day.
January - -	30·367	38·0	—	—	—	27·7	40·6	12·5	20th	52·8	2nd	·161	79·8	43·0	21st
February -	29·799	45·0	—	—	—	35·6	49·8	23·0	1st	56·3	28th	·251	88·2	67·3	13th
March - -	30·095	49·0	—	—	—	37·0	58·3	27·0	29th	64·7	30th	·262	85·7	42·8	24th
April - -	29·866	51·0	—	—	—	40·7	57·6	33·0	23rd	64·7	19th	·290	75·5	57·0	9 & 30
May - -	30·061	56·5	—	—	—	42·4	67·8	30·0	1st	80·8	20th	·323	—	—	—
June - -	29·884	58·0	—	—	—	45·1	66·1	35·0	10th	74·3	13th	·370	75·8	58·0	5th
July - -	29·856	63·0	—	—	—	53·4	70·0	42·5	16th	81·7	17th	·468	76·5	56·0	12th
August -	29·925	63·0	—	—	—	54·9	73·9	45·4	10th	79·8	13th	·477	78·0	62·0	22nd
September	29·930	61·0	—	—	—	52·5	71·0	41·1	30th	79·8	2 &6	·462	83·0	66·0	4th
October -	29·821	50·0	—	—	—	40·7	58·0	28·0	30th	69·7	3rd	·305	86·0	84·0	30th
November -	29·924	46·0	—	—	—	36·7	50·3	22·0	22nd	59·0	16th	·267	88·0	62·0	22nd
December -	29·892	47·0	—	—	—	38·8	50·4	27·3	26th	55·0	3 & 4	·269	90·0	79·0	25th
Mean -	29·951	52·2	—	—	—	41·9	59·4	12·5	20th Jan.	81·7	17th July	·325	88·7	42·8	24th Mar.

GIBRALTAR. Lat. 36° 6′ 20″ N.

January - -	30·117	53·4	—	—	—	47·9	61·1	42·5	3rd	66·1	18th	·316	77	51	30th
February -	30·085	56·1	—	—	—	50·6	63·1	44·1	11th	69·8	21st	·388	78	48	11th
March - -	30·051	58·2	—	—	—	52·0	66·0	47·8	2nd	72·1	13th	·394	81	52	7th
April - -	30·021	61·1	—	—	—	54·0	70·3	49·8	11th	77·5	21st	·438	81	63	8th
May - -	29·950	64·1	—	—	—	56·9	73·3	52·8	6 & 12	85·5	22nd	·516	87	51	23rd
June - -	30·055	68·7	—	—	—	61·5	76·9	56·8	11th	86·4	29th	·617	83	68·2	24th
July - -	30·013	73·9	—	—	—	66·3	87·4	60·1	13th	95·4	30th	·723	80·5	59·5	28th
August -	30·003	73·5	—	—	—	66·2	83·1	61·0	27th	98·8	1st	·701	82·0	69·6	27th
September	30·075	73·5	—	—	—	67·5	80·4	61·0	19th	89·0	9th	·693	84·0	63·5	21st
October -	30·055	68·0	—	—	—	62·5	74·2	53·4	13th	82·1	25th	·592	88·0	76·0	8th
November	30·121	59·5	—	—	—	54·1	65·4	46·0	23rd	70·0	15th	·445	89·0	77·0	4th
December	30·306	58·9	—	—	—	52·0	62·4	46·0	31st	68·0	10th	·389	89·5	81·0	10th
Mean -	30·075	64·07	—	—	—	57·62	71·96	42·5	3rd Jan.	98·8	1st Aug.	·517	83·3	48·8	11th Feb.

MALTA. Lat. 35° 53′ 49″ N.

January - -	30·110	54·5	—	—	—	50·4	57·8	40·4	15th	62·0	25th	·321	73·9	63·0	14&21
February -	29·980	58·0	—	—	—	53·7	60·4	50·0	7th	70·0	23rd	·377	77·5	62·0	22nd
March - -	30·037	58·0	—	—	—	52·7	60·2	47·0	16th	67·0	18th	·361	74·0	43·0	20&21
April - -	29·933	63·5	—	—	—	57·2	66·4	53·8	2 & 14	77·0	27th	·470	79·5	70·0	8th
May - -	29·882	68·7	—	—	—	61·9	72·2	58·4	14th	79·4	27th	·490	83·5	53·8	28th
June - -	29·958	74·0	—	—	—	64·1	78·1	63·8	9th	85·6	26th	·634	73·6	60·2	20th
July - -	29·978	81·0	—	—	—	74·5	86·3	67·0	1st	96·4	27th	·720	65·7	44·2	27th
August -	30·074	82·0	—	—	—	75·1	85·4	69·2	12th	94·6	24th	·732	65·2	36·0	24th
September	30·019	81·0	—	—	—	72·3	82·3	63·0	28th	94·6	17th	·696	67·8	44·2	13th
October -	30·014	74·0	—	—	—	67·0	76·1	61·6	18th	81·0	6th	·740	82·0	52·0	14th
November	30·070	70·0	—	—	—	63·7	71·7	56·8	3rd	75·4	12th	·520	72·8	55·0	30th
December	30·103	63·0	—	—	—	57·6	64·9	52·0	24th	68·4	11th	·398	70·5	53·8	25th
Mean -	29·951	68·9	—	—	—	62·6	71·8	40·4	15th Jan.	96·4	27th July	·527	71·9	36·0	24th Aug.

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No. XIII.

at Netley and Foreign Stations in the Year 1880.

Long. 1° 20′ W. Height of Barometer Cistern above Sea, 47 feet.

Mean Amount of Cloud.	Rainfall.			Weather.								Wind.								
				Number of Days of								Number of Observations under each Point.								
	Total.	Max.	Day.	Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
7·5	0·81	0·61	15th	4	3	—	—	4	1·5	18·5	—	3·0	10·0	3·0	5·5	1·5	3·5	2·0	2·5	—
7·5	4·13	0·95	15th	18	—	—	—	4	—	16·5	2	1·5	1·5	0·5	7·0	1·0	12·0	1·5	4·0	—
5·0	0·94	0·33	31st	6	—	—	—	—	9·5	8·5	1	1·5	11·0	0·5	7·5	1·0	7·5	1·5	0·5	—
7·0	1·93	0·30	12&13	14	—	1	1	—	—	13·0	—	1·5	8·5	0·5	2·0	1·0	12·0	4·0	0·5	—
6·0	0·33	0·25	31st	4	—	—	—	—	—	—	—	3·0	11·0	0·5	4·0	2·0	6·5	2·5	1·5	—
7·0	0·74	0·25	1st	9	—	—	—	—	0·5	6·5	—	2·5	1·0	—	0·5	2·5	2·5	—	3·5	—
6·5	3·14	0·71	31st	12	—	—	4	—	5	13·0	1	—	0·5	—	2·5	1·5	19·5	2·5	4·5	—
6·0	1·09	0·34	1st	8	—	—	—	—	5	7·5	—	1·5	17·0	1·0	1·5	1·5	2·5	0·5	5·5	—
6·5	4·49	1·00	13&16	13	—	—	—	—	6·5	12·0	—	—	3·5	2·5	5·5	—	9·5	2·5	6·5	—
5·0	4·95	1·0	28th	17	1	—	—	—	4·5	15·5	1	1·0	15·5	1·0	3·0	—	3·0	1·5	6·0	—
7·0	2·4	0·44	14th	12	1	—	1	2	5·0	18·5	4	0·5	8·5	—	2·5	—	13·5	—	5·0	—
8·5	3·93	0·5	29th	17	1	—	—	—	0·5	24·0	—	—	4·0	0·5	1·0	—	13·0	2·5	10·0	—
6·6	28·52	1·00	13&16 Sept. 28Oct.	134	6	1	6	10	38·0	153·5	9	16·0	92·0	10·0	42·5	12·0	105·0	21·0	50·0	—

Long. 5° 20′ 53″ W. Height of Barometer Cistern above Sea, 53 feet.

4·5	8·07	2·33	24th	13	—	—	—	—	15·0	10·0	5·0	5·5	—	22·0	—	—	—	3	—	0·5
5·2	2·84	1·21	25th	15	—	—	—	—	11·5	9·0	1·5	2·0	—	15·5	—	—	·5	10·0	1·0	—
5·4	3·08	0·96	18th	13	—	—	—	8·5	10·5	12·0	—	1·0	1·5	15·5	1·5	0·5	5·5	1·5	4·0	—
3·0	2·85	0·90	23rd	6	—	—	—	—	20·0	1·5	—	1·5	2·0	2·5	—	—	9·5	10·5	4·0	—
4·4	3·28	1·38	16th	12	—	—	5	—	12·0	6·0	—	0·5	9·5	8·5	—	—	4·5	7·0	1·0	—
2·6	—	—	—	—	—	—	—	—	17·5	2·0	—	—	3·5	4·0	0·5	—	14·0	6·0	2·0	—
1·8	—	—	—	—	—	—	—	—	22·5	2·0	—	0·5	10·0	2·0	—	—	13·5	4·5	0·5	—
2·5	·04	—	20th	1	—	—	—	—	18·0	2·0	—	—	7·5	2·0	0·5	—	12·0	7·0	1·0	1·0
4·3	—	—	—	—	—	—	—	—	17·0	7·0	—	—	8·0	11·5	—	—	6·5	2·5	1·0	0·5
5·6	2·29	1·4	7th	9	—	—	—	—	9·0	12·0	—	2·0	4·5	6·5	0·5	—	8·5	7·0	1·0	1·0
4·9	5·63	1·58	29th	15	—	—	—	—	10·0	8·0	—	3·0	3·5	2·5	—	0·5	5·0	9·0	6·5	—
3·7	1·77	0·80	30th	5	—	—	—	—	14·5	4·0	—	2·5	5·5	7·5	0·5	—	5·0	4·5	5·5	—
31·9	29·85	2·33	24th Jan.	89	—	—	5	8·5	171·5	75·5	2·0	18·5	55·5	100·0	3·5	1·0	84·5	72·5	27·5	3·0

Long. 14° 30′ 54″ E. Height of Barometer Cistern above Sea, 70 feet.

5·0	3·56	·78	12th	18	—	1	—	—	12	12	—	3	8	1	8	—	3	2	6	—
4·5	3·49	·97	4th	14	—	—	—	—	11	13	—	2	10	4	1	1	6	2	3	—
4·5	2·26	1·57	3rd	8	—	—	—	—	13	9	—	1	11	4	8	1	1	5	—	—
3·0	0·13	0·01	12th	3	—	—	1	—	16	5	—	1	7	2	7	—	—	1	12	—
2·0	0·35	0·17	2 & 13	3	—	—	1	—	23	5	—	7	3	3	5	1	2	3	7	—
1·0	—	—	—	—	—	—	—	—	25	2	—	4	6	3	4	1	2	—	10	—
0·2	—	—	—	—	—	—	—	—	30	1	—	8	9	1	—	1	—	4	8	—
1·0	0·01	—	19th	—	—	—	1	—	27	2	—	3	3	5	6	2	2	2	8	—
2·5	2·48	2·03	27th	4	—	—	4	—	19	3	—	1	8	2	3	1	3	4	8	—
3·0	2·67	1·70	2nd	3	—	—	2	—	14	7	10	1·0	3·0	5·0	6·0	2·0	3·0	3·0	8·0	—
4·0	2·14	1·88	2nd	3	—	—	1	—	10	6	—	2·0	5·0	2·0	7·0	4·0	3·0	3·0	4·0	—
4·0	2·3	1·23	19th	10	—	—	2	—	10	6	—	2·0	7·0	1·0	5·0	1·0	2·0	4·0	9·0	—
2·8	19·12	2·03	27th Sept.	66	—	1	12	—	210	71	10	35·0	80·0	33·0	60·0	15·0	27·0	33·0	83·0	—

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Appendix

Annual Abstract of Meteorological Observations taken

Nicosia, Cyprus. Lat. 35° 10′ 50″ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Hourly Means. 9 p.m.	Daily Means. Simple.	Daily Means. Reduced.	Means of Min.	Means of Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Minimum.	Minimum. Day
January															
February															
March															
April															
May															
June															
July															
August															
September															
October															
November	—	—	—	—	—	52°9	76°6	45°8	29th	87°2	6th	·481	74°2	52°9	6th
December	—	—	—	—	—	41°7	61°7	31°5	10th	72°3	2nd	·300	75°4	59°4	8th
Mean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mount Troados, Cyprus. Lat. 34° 57′ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Hourly Means. 9 p.m.	Daily Means. Simple.	Daily Means. Reduced.	Means of Min.	Means of Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Minimum.	Minimum. Day
January															
February															
March															
April															
May															
June															
July	29·705	68·5	—	—	—	56·0	78·8	49·4	6th	85·8	12th	·351	49·1	27·6	14th
August	29·717	67·6	—	—	—	56·6	78·6	51·8	21st	88·6	12th	·326	44·9	25·0	12th
September	29·879	57·9	—	—	—	49·8	69·5	41·2	25th	81·2	12th	·252	47·6	30·8	5th
October															
November															
December															
Mean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Aneroid barometer.

Polymedia, Cyprus. Lat. 34° 40′ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Hourly Means. 9 p.m.	Daily Means. Simple.	Daily Means. Reduced.	Means of Min.	Means of Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Minimum.	Minimum. Day
January	29·826	50·3	—	—	—	39·6	56·1	34·4	28th	62·0	21st	·272	75·0	39·	25th
February	29·756	57·5	—	—	—	45·2	64·4	36·2	2nd	69·2	10th	·313	65·0	35·	10th
March	29·666	56·2	—	—	—	44·4	64·5	28·4	15th	74·4	1st	·324	70·0	53·	9th
April	29·582	66·4	—	—	—	52·2	73·0	42·0	16th	87·4	30th	·492	73·0	55·	3rd
May	29·537	70·8	—	—	—	59·0	81·2	50·2	6 & 8	93·4	26th	·579	66·4	42·4	25th
June															
July															
August															
September															
October*															
November	29·658	65·0	—	—	—	58·8	76·5	51·2	29th	86·2	5th	·452	61·8	45·6	8th
December	29·670	53·0	—	—	—	48·0	62·7	37·2	9th	71·0	5th	·347	76·8	63·6	18th
Mean	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Incomplete.

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No. XIII.—*continued.*

at Netley and Foreign Stations in the year 1880.

Long. 33° 21′ 15″ E. Height of Barometer Cistern above Sea, 592 feet.

Mean Amount of Cloud.	Rainfall.			Weather.								Wind.								
				Number of Days of								Number of Observations under each Point.								
	Total.	Maximum.	Day.	Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
3·0	2·49	1·69	17th	8	—	—	2	—	17·5	5·0	—	2·0	6·0	6·0	2·0	1·0	4·0	3·5	1·0	4·5
5·4	3·41	0·95	24th	15	—	—	1	—	9·0	10·5	—	2·5	8·0	5·5	—	0·5	4·0	2·5	—	8·0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Long. 33° 55′ E. Height of Barometer Cistern above Sea, 5,720 feet. (?)

1·0	0·88	·88	31st	1	—	1	1	—	28	3	—	—	8·0	2·0	4·0	1·0	7·5	2·5	6·0	—
2·4	·21	·21	20th	1	—	—	—	—	29	1·5	—	0·5	3·5	3·0	6·0	1·5	7·5	3·0	6·0	—
3·0	—	—	—	—	—	—	—	—	27	3·0	—	2·5	2·0	0·5	5·0	2·0	9·0	5·0	4·0	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Long. 33° 0 E. Height of Barometer Cistern above Sea, 400 feet. (?)

4	5·25	0·90	18th	15	—	1	2	—	14	2	—	5	4	1	0·5	0·5	—	7·5	12·5	—
3·4	2·69	0·95	21st	7	—	1	2	—	16	1	—	3·5	9	9	0·5	—	—	0·5	6·5	—
3·8	2·38	0·88	16th	5	3	—	—	—	16·5	3	—	1·0	6·5	2	1·5	0·5	2·0	9·5	8·0	—
2·97	2·97	0·71	5th	10	—	1	5	—	14·0	3·5	—	0·5	2·0	10·5	1·0	1·5	4·0	5·0	5·5	—
3·85	0·37	0·27	13th	2	—	—	2	—	18·5	4·0	—	—	1·5	3·5	5·0	1·0	6·0	9·0	6·0	—
3·5	3·89	2·25	1st	6	—	—	—	—	15·5	6·5	—	—	6·0	4·5	7·0	—	4·5	1·5	6·5	—
5·0	12·26	5·98	24th	13	—	1	3	—	11·	11·5	—	1·5	15·5	4·0	0·0	0·5	1·0	1·0	7·5	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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Appendix

Annual Abstract of Meteorological Observations taken

Scutari. Lat. 41° N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	9 p.m.	Daily Means. Simple.	Reduced.	Means of Min.	Max.	Abs. Min. Temp.	Day.	Abs. Max. Temp.	Day.	Tension of Vapour.	Relative Humidity. Mean.	Min.	Day.
January - -	30·239	32·5	—	—	—	26·5	39·8	16·6	24th	53·2	1st	·151	80·0	53·4	14th
February -	30·130	39·9	—	—	—	33·9	47·5	26·0	20th	59·4	24th	·201	80·8	59·4	21st
March - -	30·090	40·6	—	—	—	31·9	47·9	16·5	14th	63·6	30th	·206	78·8	58·4	31st
April - -	29·922	50·6	—	—	—	40·9	59·7	29·7	14th	77·5	29th	·290	78·2	64·0	30th
May - -	29·869	61·4	—	—	—	50·4	71·4	57·4	2nd	82·5	20th	·421	76·5	48·0	26th
June - -	29·848	73·0	—	—	—	59·9	84·0	53·5	2nd	93·6	15th	·581	68·4	48·0	19th
July - -	29·806	77·0	—	—	—	64·4	89·8	57·8	29th	98·8	22nd	·658	64·2	50·0	28th
August - -	29·821	76·6	—	—	—	62·9	89·6	53·2	31st	103·4	2nd	·595	61·8	32·0	3rd
September -	29·965	69·3	—	—	—	55·9	79·7	48·2	23rd	88·0	17th	·494	67·2	52·8	13th
October - -	29·990	67·0	—	—	—	54·4	73·8	42·8	26th	80·6	11th	·465	75·5	63·0	18th
November -	30·131	61·6	—	—	—	48·0	62·4	37·6	30th	70·6	19& 20	·365	83·4	60·2	15th
December -	30·068	54·9	—	—	—	37·3	51·7	21·6	8th	61·4	18th	·238	81·9	61·0	9th
Mean -	29·995	58·7	—	—	—	47·2	66·4	16·5	14th Mar.	103·4	2nd Aug.	·388	74·7	32·2	3rd Aug.

Fort Napier, Natal. Lat. 29° 3′ S.

January - -	29·761	73·2	—	—	—	63·7	85·8	54·0	29th	110·8	23rd	·536	60·8	30·0	22nd
February -	29·815	73·0	—	—	—	63·9	84·0	57·8	5th	110·4	9th	·600	62·9	28·0	9th
March - -	29·846	68·9	—	—	—	58·1	82·4	45·0	29th	95·7	21st	·510	60·3	30·0	21st
April - -	29·913	63·4	—	—	—	51·8	77·3	42·5	27th	93·8	9th	·429	54·6	28·0	14th
May - -	30·080	60·3	—	—	—	50·8	75·6	44·5	27th	85·2	31st	·369	49·4	25·0	22nd
June - -	30·219	55·5	—	—	—	43·6	72·0	37·2	23rd	83·0	1st	·284	63·8	43·4	25th
July - -	30·178	56·0	—	—	—	43·8	75·9	37·5	5th	85·2	17th	·280	62·8	34·2	17th
August - -	29·975	61·4	—	—	—	49·2	78·6	38·4	24th	92·6	7th	·310	54·7	25·0	16th
September -	29·993	65·0	—	—	—	52·4	74·2	37·8	14th	99·4	23rd	·373	56·0	27·0	18th
October - -	29·853	66·6	—	—	—	56·0	77·0	48·8	18th	97·0	30th	·469	56·2	27·0	27th
November -	29·822	68·0	—	—	—	57·0	78·4	50·4	19th	96·2	10th	·461	56·5	30·0	23rd
December -	30·028	66·6	—	—	—	56·0	77·0	55·4	25th	104·2	18th	·461	69·0	37·6	18th
Mean -	29·956	64·8	—	—	—	53·8	78·1	37·2	23rd June	110·8	23rd Jan.	·423	58·0	25·0	20th May 16Aug.

Sierra Leone. Lat. 88° 29′ 30″ N.

January - -	29·816	81·2	—	—	—	72·5	92·5	70·0	21st	96·0	14th	1·065	95·5	72·9	2nd
February -	29·869	81·2	—	—	—	—	—	71·0	20th	94·0	14th	·946	75·6	66·8	5th
March - -	29·891	81·6	—	—	—	75·4	92·5	72·0	1st	96·0	30th	1·008	76·4	66·2	13th
April - -	29·858	82·1	—	—	—	74·9	91·0	72·0	16th	94·0	13th	1·001	78·4	64·1	24th
May - -	29·947	80·6	—	—	—	79·5	92·4	75·0	1st	98·0	28th	1·014	87·5	72·0	1st
June - -	29·933	79·0	—	—	—	80·5	90·5	70·0	19th	98·0	4th	1·027	88·1	68·0	23rd
July - -	29·982	77·6	—	—	—	73·9	90·1	62·0	5th	96·0	6th	·952	89·0	76·0	6th
August - -	29·865	78·6	—	—	—	79·7	88·1	63·0	18th	96·0	4th	·997	90·5	76·0	22nd
September -	29·994	76·9	—	—	—	73·5	85·5	70·0	26th	91·0	23rd	·900	91·0	70·5	9th
October - -	29·935	78·9	—	—	—	77·7	90·8	70·0	17th	97·0	29th	·875	83·0	71·9	17th
November -	29·931	79·7	—	—	—	78·9	90·0	68·0	28th	95·0	22nd	·897	85·0	79·0	5th
December -	29·972	79·2	—	—	—	78·6	90·0	66·0	28th	96·0	10th	·958	79·4	76·0	20&23
Mean -	29·881	79·7	—	—	—	67·9	82·7	62·0	5th July	98·0	28th May 4June	·973	84·9	64·7	24th Apr.

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No. XIII.—*continued.*

at Netley and Foreign Stations in the Year 1880.

Long. 29° 3′ E. Height of Barometer Cistern above Sea, 60 feet.

Mean Amount of Cloud.	Rainfall.			Weather.								Wind.								
				Number of Days of								Number of Observations under each Point.								
	Total.	Max.	Day.	Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
6·3	3·51	0·55	20th	1	15	1	—	—	9·5	16·0	—	—	—	—	—	—	—	—	—	—
7·5	0·54	0·40	29th	7	1	—	—	—	4·5	20·0	—	2·5	8·0	9·5	1·0	3·5	3·0	—	—	1·5
5·8	2·68	0·70	18th	7	13	—	—	1	10·0	14·0	—	4·0	8·0	1·0	—	5·5	7·5	1·0	1·5	2·5
5·4	0·54	0·38	5th	4	—	—	1	1	13·0	12·5	—	6·0	13·0	1·0	—	4·5	3·0	1·0	—	1·5
5·4	1·91	0·71	21st	11	—	—	5	1	10·5	16·0	—	7·5	8·5	0·5	0·5	6·5	5·0	2·5	—	—
3·3	3·64	2·44	21st	7	—	—	5	—	17·0	4·0	—	3·5	6·5	1·0	—	3·5	9·5	0·5	0·5	5·0
3·0	0·37	0·33	17th	2	—	—	—	—	18·5	2·5	—	3·5	15·0	4·5	—	3·5	3·5	—	0·5	*
2·7	1·73	0·35	24th	11	—	—	8	—	21·0	1·5	—	3·0	7·5	2·0	—	5·0	7·0	1·5	1·0	4·0
4·2	1·85	0·46	29th	12	—	—	1	—	14·5	6·0	—	2·5	14·5	1·0	—	2·5	6·5	1·5	—	1·5
5·0	2·81	0·76	25th	6	—	—	2	—	13·0	11·0	—	2·5	5·0	2·0	—	4·5	13·0	0·5	—	3·5
6·6	1·18	0·32	2nd	13	—	—	—	—	5·5	17·0	—	3·0	10·5	4·0	2·0	3·5	3·5	0·5	0·5	2·5
6·0	1·57	0·56	10th	9	3	—	1	1	7·5	12·5	1	5·0	5·5	2·5	1·0	4·0	7·0	1·0	—	5·0
5·1	22·33	2·44	21st June	90	32	1	23	4	144·5	133·0	1	43·0	102·0	29·0	4·5	46·5	68·5	11·0	4·0	27·0

* No observation on afternoon, 6th.

Long. 30° 2′ E. Height of Barometer Cistern above Sea, 2,200 feet.

6·3	1·86	·27	2 & 9	12	—	—	5	—	10·5	18·5	—	1·5	16·0	5·5	2·5	·5	—	3·5	1·5	—
6·9	12·37	5·58	16th	10	—	—	1	—	7·0	21·5	—	1·5	—	—	—	—	—	—	—	—
4·6	2·10	1·12	7th	7	—	—	5	—	14·0	17·0	—	3·0	13·0	5·0	—	—	2·0	2·0	4·0	2·0
2·9	1·84	0·48	16th	7	—	—	5	—	21·0	9·0	—	—	—	—	—	—	—	—	—	—
2·7	1·54	1·45	16th	3	—	—	1	—	23·5	7·5	—	1·0	17·0	3·5	2·5	0·5	2·0	2·5	0·5	1·5
1·4	0·10	0·06	10th	2	—	—	1	—	26·0	1·5	—	—	12·5	0·5	4·5	0·5	4·0	5·5	2·5	—
—	—	—	—	—	—	—	—	—	31	—	—	0·5	18·5	1·0	4·5	1·0	2·0	1·5	2·0	—
2·4	0·25	0·18	10th	4	—	—	1	—	24	7	—	1·5	15·0	6·0	4·0	1·5	0·5	1·5	1·0	—
3·1	1·09	0·82	7th	8	—	—	—	—	21	9	—	4·0	13·0	5·5	4·0	0·5	—	2·5	2·5	—
4·4	5·22	1·45	10th	11	—	1	5	—	12·5	18·5	—	1·5	19·0	3·5	3·0	1·0	—	1·5	1·5	—
6·6	8·93	1·75	17th	24	—	—	14	—	11·0	29·0	—	0·5	16·5	5·5	4·0	1·0	0·5	1·0	1·0	—
4·1	5·34	1·85	19th	11	—	1	8	—	12·5	18·5	—	1·5	19·0	3·5	3·0	1·0	1·5	1·5	—	—
4·03	30·58	5·58	16th Feb.	99	—	2	46	—	214·0	157·0	—	16·5	159·5	39·5	32·0	7·5	12·5	23·0	16·5	3·5

Long. 13° 9′ 17″ W. Height of Barometer Cistern above Sea, 224 feet.

3	—	—	—	—	—	—	1	—	30	—	—	1	—	14·5	0·5	—	0·5	11	0·5	3
3	2·0	2·0	15th	1	—	—	1	—	29	—	—	2	4·5	12·5	—	—	0·5	5·5	4	—
3	1·45	0·5	30th	4	—	—	1	—	30	—	—	1·5	2·5	1·5	—	—	4	12·5	8	1
3·3	6·04	1·88	26th	5	—	—	3	—	23	—	—	0·5	2·5	2·5	1	0·5	10	7·5	3	2·5
3	5·90	1·50	15th	12	—	—	18	—	1	—	—	—	5	—	3·5	7	3·5	3·5	1·5	7
3·5	14·83	2·80	14th	23	—	—	5	—	2	—	—	2	2	—	3	7·5	3	8·5	2	2
3·2	38·64	5·80	15th	26	—	—	—	—	5	—	—	1·5	4·5	—	6·5	5	5·5	2	2	4
3·5	51·67	7·02	10th	25	—	—	—	—	4	—	—	3	2·5	2·5	3·5	7·5	1	4·5	1·5	5
3·8	41·33	7·07	17th	24	—	—	9	—	6	—	—	4·0	6·0	5·0	1·5	6·0	1·0	1·0	—	5·5
3·6	13·37	3·50	11th	21	—	—	12	—	21	—	—	5·0	4·0	3·0	1·0	1·0	0·	3·0	3·0	4·0
3·6	3·19	1·4	6th	8	—	—	9	—	16	—	—	3·0	8·5	—	2·0	0·5	3·5	2·5	6·5	3·5
4·5	0·72	·58	—	2	—	—	3	—	16	—	—	—	7	—	5·0	1·0	8·0	1·0	0·0	—
3·4	179·14	7·07	17th Sept.	151	—	—	62	—	183	—	—	23·5	56·0	41·5	27·5	36·0	40·5	51·5	41·0	37·5

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Appendix

Annual Abstract of Meteorological Observations taken

BARBADOS. Lat. 13° 4′ 30″ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	9 p.m.	Daily Means. Simple.	Reduced.	Means of Min.	Max.	Abs. Min. Temp.	Day.	Abs. Max. Temp.	Day.	Tension of Vapour.	Relative Humidity. Mean.	Min.	Day.
January -	29·945	78·6	—	—	—	73·6	83·3	69·0	25th	85·0	1st	·734	76·0	50·0	25th
February -	30·025	78·0	—	—	—	74·0	83·4	71·0	18th	85·0	21st	·688	71·0	53·0	4th
March -	30·034	80·4	—	—	—	75·6	85·0	71·5	14th	87·0	3rd	·658	63·0	48·0	12th
April -	30·051	81·4	—	—	—	76·7	86·4	72·0	2nd	88·5	7th	·696	64·0	54·0	3rd
May -	30·016	84·0	—	—	—	77·4	87·4	74·0	2nd	89·0	15th	·732	60·0	51·0	10th
June -	30·058	83·0	—	—	—	77·1	86·4	73·0	30th	89·0	8th	·774	68·8	55·9	1st
July -	30·057	82·0	—	—	—	77·1	84·4	74·0	15th	87·0	19th	·792	71·2	61·2	2nd
August -	29·993	82·0	—	—	—	77·3	84·3	73·5	25th	89·0	31st	·825	74·0	60·0	21st
September	30·015	83·0	—	—	—	76·8	86·1	73·0	3rd	92·	28th	·813	72·0	68·0	8th
October -	29·994	83·0	—	—	—	76·6	86·7	73·0	10th	89·5	7th	·801	68·0	60·0	25th
November	29·996	82·0	—	—	—	75·6	85·0	72·0	10th	92·5	14th	·745	68·0	54·0	9th
December	30·034	81·0	—	—	—	75·7	84·8	72·0	8th	87·0	7th	·711	67·2	51·9	7th
Mean	30·265	81·5	—	—	—	67·7	85·2	69·0	25th Jan.	92·5	14th Nov.	·747	67·7	48·0	12th Mar.

NEWCASTLE, JAMAICA. Lat. 18° 62′ N.

January -	30·169	62·0	—	—	—	51·0	66·0	45·0	20th	73·4	5,6&23	·468	76·0	55·2	24th
February-	30·246	60·0	—	—	—	52·8	67·0	46·0	3rd	75·0	21&29	·425	65·2	46·9	28th
March -	30·234	60·0	—	—	—	52·0	71·0	45·0	6th	76·4	15th	·470	64·0	50·7	20th
April -	30·322	62·0	—	—	—	54·0	70·0	52·0	21st	78·3	24th	·411	58·0	57·0	18th
May -	30·101	65·0	—	—	—	54·0	74·0	50·0	18&22	79·4	12th	·541	73·0	55·0	4 & 5
June -	30·222	67·0	—	—	—	52·0	73·0	50·0	12th	85·3	12th	·552	67·6	54·7	23rd
July -	30·156	69·0	—	—	—	55·2	75·7	48·0	20th	82·0	24th	·563	66·4	50·3	25th
August -	30·126	67·0	—	—	—	55·0	72·0	51·0	10th	78·4	18th	·581	74·0	62·0	2nd
September	30·113	68·0	—	—	—	—	—	—	—	—	—	—	—	—	—
October -	30·107	67·0	—	—	—	—	—	—	—	—	—	—	—	—	—
November	30·162	66·0	—	—	—	52·0	80·0	48·0	16th	83·0	26th	·592	72·6	63·5	4th
December	30·191	62·0	—	—	—	48·4	78·0	46·0	21st	84·9	4th	·545	70·2	55·5	21st
Mean	30·179	64·7	—	—	—	52·6	72·6	45·0	20th Jan.	85·3	12th June	·514	68·7	46·9	28th Feb.

UP-PARK CAMP, JAMAICA. Lat. 17° 59′ N.

January -	29·884	84·3	—	—	—	65·4	96·2	50·0	15th	99·0	1st	·878	68·4	63·2	10th
February-	29·934	84·2	—	—	—	73·8	98·0	64·0	6th	99·6	18th	·846	69·2	59·7	20&21
March* -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April -	30·003	82·2	—	—	—	66·5	90·4	65·0	10&15	97·0	27th	·785	71·2	63·6	29th
May -	29·974	84·0	—	—	—	70·0	89·0	66·0	3rd	97·0	15th	·721	60·0	49·0	25th
June -	30·002	84·0	—	—	—	71·0	89·7	69·0	3rd	94·0	28th	·749	59·8	52·0	3 & 17
July -	30·009	84·0	—	—	—	70·4	88·5	68·0	14th	94·0	2nd	·762	60·7	52·0	26&28
August -	29·962	82·0	—	—	—	70·0	86·3	68·0	8th	91·0	12th	·737	64·2	54·0	14th
September	29·977	84·0	—	—	—	70·0	—	67·0	8th	—	—	·729	58·9	52·0	7th
October -	29·976	84·0	—	—	—	74·5	90·0	69·0	12th	93·0	5 & 17	·741	58·0	52·0	15th
November	30·012	83·0	—	—	—	72·0	88·8	69·0	10th	92·0	28th	·673	57·0	38·0	30th
December	30·043	81·0	—	—	—	69·0	89·0	66·0	15th	91·0	2nd	·567	53·0	45·0	13th
Mean	29·979	76·39	—	—	—	64·38	75·49	50·0	15th Jan.	99·6	18th Feb.	·682	62·76	38·0	30th Nov.

* Incomplete.

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No. XIII.—*continued.*

at Netley and Foreign Stations in the Year 1880.

Long. 59° 40′ 83″ W. Height of Barometer Cistern above Sea, 30 feet.

Mean Amount of Cloud.	Rainfall.			Weather.								Wind.								
				Number of Days of								Number of Observations under each Point.								
	Total.	Max.	Day.	Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
4·4	3·77	2·04	14th	19	—	—	—	—	21·0	7·0	—	0·5	29·0	1·5	—	—	—	—	—	—
4·4	3·41	0·62	17th	21	—	—	—	—	19·5	6·0	—	1·0	26·5	—	—	—	—	—	1·5	—
3·5	1·62	0·30	8th	15	—	—	—	—	24·5	4·0	—	—	24·5	0·5	—	—	—	—	3·0	—
4·3	3·18	1·05	23rd	17	—	—	—	—	17·5	5·0	—	—	27·5	1·0	1·5	—	—	—	—	—
3·0	2·03	0·65	27th	15	—	—	—	—	19·0	1·5	—	—	30·0	1·0	—	—	—	—	—	—
4·6	5·94	1·32	28th	21	—	—	—	—	15·0	10·0	—	—	27·0	0·5	2·5	—	—	—	—	—
4·2	6·70	2·01	14th	24	—	—	—	—	15·5	8·0	—	0·5	27·5	2·0	1·0	—	—	—	—	—
4·1	9·69	2·54	15th	22	—	—	—	—	18·5	8·0	—	1·5	23·0	1·0	5·0	—	—	—	0·5	—
4·6	10·92	2·18	10th	17	—	—	—	—	17·0	4·5	—	—	23·5	1·5	4·5	—	—	—	0·5	—
3·8	3·19	0·9	16th	17	—	—	—	—	21·0	1·5	—	—	26·5	1·0	3·5	—	—	—	—	—
4·2	6·77	1·65	16th	21	—	—	—	—	17·5	4·0	—	—	28·5	—	1·5	—	—	—	—	—
3·4	1·53	0·25	9th	16	—	—	—	—	25·0	2·5	—	—	28·5	—	2·5	—	—	—	—	—
4·0	60·77	2·54	15th Aug.	215	—	—	—	—	231·0	52·0	—	3·5	322·0	10·0	22·0	—	—	—	5·5	—

Long. 76° 42′ W. Height of Barometer Cistern above Sea, 3,800 feet.

5·0	11·76	2·2	11th	19	—	—	—	—	8·5	10·0	—	—	—	11·0	7·5	—	9·5	—	—	3·0
3·1	0·49	0·3	13th	6	—	—	—	—	—	—	—	1·5	1·5	14·0	7·0	2·5	—	—	—	2·5
3·7	3·16	1·0	25&28	6	—	—	—	—	14·0	4·5	—	1·0	—	4·5	9·0	14·5	—	—	—	2·0
5·5	4·67	1·28	11th	15	—	—	—	—	9·0	18·2	—	—	1·5	10·5	13·5	0·5	—	—	—	4·0
4·8	18·62	3·3	22nd	20	—	—	3	—	9·5	13·0	8·5	—	0·5	10·0	9·5	—	0·5	—	—	10·5
3·8	6·90	3·5	1st	5	—	—	—	—	14·5	3·5	—	—	—	13·0	3·5	1·5	6·5	—	—	5·5
5·0	3·31	7·5	28th	11	—	—	—	—	8·0	5·0	18·0	—	—	—	—	—	—	—	—	—
4·5	5·55	1·5	8th	6	—	—	3	—	6·0	2·0	—	—	—	None.		—	—	—	—	*
3·5	—	—	—	—	—	—	—	—	13·5	5·0	—	—	—	—	—	—	—	—	—	
2·0	—	—	—	—	—	—	—	—	26·0	1·0	—	—	—	—	—	—	—	—	—	
3·8	2·85	0·82	7th	10	—	—	—	—	12·5	2·5	—	—	—	—	—	—	—	—	—	—
5·2	6·43	1·28	25th	17	—	—	1	—	9·5	11·0	—	—	—	—	—	—	—	—	—	—
4·1	63·74	7·5	28th July	115	—	—	7	—	131·0	75·7	26·5	2·5	3·5	63·0	50·0	19·0	16·5	—	—	27·5

* Observations defective. Instruments broken.

Long. 76° 56′ W. Height of Barometer Cistern above Sea, 235 feet.

3·5	4·25	2·25	10th	4	—	—	—	—	13·5	—	—	11	6	0·5	11·5	0·5	—	—	—	1·5
3·6	—	—	—	—	—	—	—	—	17·5	1·5	—	13	—	1·5	14·5	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4·5	0·11	0·07	17th	3	—	—	—	—	5·	1	—	}								
5·5	6·13	1·95	15th	11	—	—	—	—	—	31	—	} †								
3·0	1·50	1·50	25th	1	—	—	—	—	22	—	—	}								
3·0	2·90	0·73	12th	12	—	—	16	—	22	—	—	4·5	4·0	6·5	11·5	0·5	1	1·5	—	1·5
3·5	8·04	3·67	18th	12	—	—	7	—	13	25	1	2·0	1·0	5·0	6·0	1·5	—	0·5	—	2·0
3·5	1·73	·90	30th	8	—	—	—	—	19	1·0	—	—	—	—	—	—	—	—	—	—
4·0	·98	·40	12th	5	—	—	—	—	14	2·0	—	—	—	—	—	—	—	—	—	—
3·0	1·0	·27	16th	5	—	—	—	—	19	1·5	—	—	—	—	—	—	—	—	—	—
4·5	3·38	·86	27th	9	—	—	—	—	13·0	14·0	—	—	—	—	—	—	—	—	—	—
3·46	30·02	3·67	18th Aug.	70	—	—	23	—	158·0	55·5	1	30·5	11·0	13·5	43·5	2·5	1·0	2·0	—	5·0

† No observations. Anemometer stand in hands of R.E. Department.

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Appendix

Annual Abstract of Meteorological Observations taken

NASSAU, BAHAMAS. Lat. 25° 5′ N.

Month.	Mean Pressure.	Air Temperature.										Tension of Vapour.	Relative Humidity.		
		Hourly Means.		Daily Mean.		Means of		Abs. Min.		Abs. Max.				Min.	
		9 a.m.	9 p.m.	Simple.	Reduced.	Min.	Max.	Temp.	Day.	Temp.	Day.		Mean.		Day.
January	30·038	77·0	—	—	—	67·5	80·0	60·2	21st	82·8	23rd	·630	74·9	51·5	21st
February	30·107	75·0	—	—	—	66·0	81·5	60·5	23rd	87·5	15th	·652	75·2	51·5	24th
March	30·084	76·0	—	—	—	65·9	82·9	59·2	27th	88·5	17th	·688	60·4	43·5	30th
April	30·112	77·3	—	—	—	66·5	85·0	58·5	11th	89·5	30th	·586	58·7	45·5	3rd
May	30·028	77·0	—	—	—	70·9	84·6	66·5	6th	93·2	6th	·709	70·2	57·0	1st
June	30·072	82·1	—	—	—	72·7	89·5	65·5	17th	98·0	27th	·789	69·6	60·4	29th
July	30·076	84·3	—	—	—	74·2	92·7	70·5	3rd	99·0	24th	·830	67·2	58·0	6 & 17
August	29·995	83·4	—	—	—	75·1	89·3	69·5	19th	92·8	11th	·838	75·2	58·0	12th
September	29·990	82·5	—	—	—	73·9	87·3	71·0	29th	91·5	24th	·820	73·6	53·5	24th
October	29·995	80·4	—	—	—	71·9	81·4	68·0	31st	86·5	5th	·734	69·0	49·0	26th
November	30·092	79·0	—	—	—	71·0	79·5	65·5	2nd	83·5	5th	·751	75·0	55·4	1st
December	30·054	74·0	—	—	—	63·8	73·4	55·2	28th	81·0	4th	·575	69·2	48·0	20th
Mean	30·053	79·8	—	—	—	69·9	83·9	55·2	28th Dec.	99·0	24th July	·706	69·8	43·5	30th Mar.

BERMUDA. Lat. 32° 17′ 43″ N.

January	30·189	66·9	—	—	—	61·1	71·5	55·0	21st	76·9	9 & 10	·555	88·0	64·0	23rd
February	30·221	64·4	—	—	—	57·7	69·3	54·0	26th	76·9	14th	·515	88·0	62·0	23rd
March	30·150	65·6	—	—	—	58·7	70·4	50·5	28th	79·1	12th	·548	88·0	71·0	25th
April	30·210	68·8	—	—	—	55·6	73·6	47·2	14th	78·9	26th	·524	55·0	50·0	4th
May	*														
June															
July	30·095	81·0	—	—	—	62·8	87·5	55·0	31st	92·1	1st	·820	76·0	56·0	13th
August	30·067	81·0	—	—	—	60·6	86·0	51·0	1st	95·5	8th	·849	80·0	72·0	23rd
September	30·134	78·2	—	—	—	65·2	85·0	56·0	14th	88·0	2nd	·777	85·0	74·0	15th
October	30·027	73·0	—	—	—	64·8	78·5	62·0	15th	87·0	5th	·835	76·5	53·0	27th
November	30·150	72·5	—	—	—	57·2	76·3	62·0	25th	81·0	8th	·835	81·5	57·0	4th
December	29·990	65·0	—	—	—	56·0	70·9	49·0	22nd	77·0	1st	·515	85·5	71·0	11th
Mean	30·123	71·6	—	—	—	59·9	76·8	47·2	14th Apr.	95·5	8th Aug.	·637	76·3	50·0	4th Apr.

* No observations owing to sickness of observer and assistant.

SINGAPORE. Lat. 1° 16′ N.

January	29·259	80·0	—	—	—	69·3	91·7	68·0	10th	95·4	30th	·894	78·1	68·0	10th
February	29·259	81·0	—	—	—	69·8	92·6	68·0	25th	96·8	21st	·827	77·9	68·0	25th
March	29·262	80·0	—	—	—	69·4	92·6	67·0	13th	95·8	13th	·902	78·4	67·0	13th
April	29·269	80·0	—	—	—	69·3	92·6	68·0	4th	95·8	28th	·889	78·6	68·0	4th
May	29·265	81·0	—	—	—	69·3	94·3	68·0	27th	96·8	25th	·902	76·4	68·0	27th
June	29·269	80·0	—	—	—	69·3	93·4	68·2	2nd	96·0	12th	·933	83·0	75·2	13th
July	29·267	80·0	—	—	—	68·8	93·0	67·2	20th	94·8	1st	·897	81·8	75·2	26&27
August	29·266	80·0	—	—	—	69·2	92·9	68·0	5th	95·8	7th	·908	79·4	68·0	5th
September	29·284	80·0	—	—	—	69·2	92·6	68·0	20th	95·4	27th	·892	82·2	68·0	20th
October	29·280	81·0	—	—	—	69·5	93·5	68·0	8th	95·6	29th	·912	77·6	72·8	23rd
November	29·283	80·0	—	—	—	69·3	89·7	68·0	6th	96·2	18th	·927	80·5	72·8	8th
December	29·247	81·0	—	—	—	69·5	92·8	68·0	6th	95·4	16th	·877	76·0	72·8	31st
Mean	29·267	80·3	—	—	—	69·3	92·6	67·0	13th Mar.	96·8	25th May	·896	79·1	67·0	13th Mar.

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No. XIII.—*continued.*

N etley and Foreign Stations in the Year 1880.

Long. 77° 21′ W. Height of Barometer Cistern above Sea, 44 feet.

Mean Amount of Cloud.	Rainfall. Total.	Max.	Day.	Weather. Number of Days of: Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	Winds. Number of Observations under each Point: N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
5·5	1·76	1·0	26th	10	—	—	—	—	6·0	7·0	—	1·5	19·5	—	3·0	3·5	0·5	1·5	1·5	—
6·0	1·11	0·55	15th	7	—	—	—	—	3·0	11·0	—	0·5	10·0	—	7·5	3·5	3·0	—	4·5	—
5·5	0·98	0·57	22nd	4	—	—	—	—	6·0	7·0	—	3·5	6·5	2·5	11·0	2·5	3·0	—	2·0	—
5·5	0·26	0·10	19th	4	—	—	—	—	8·0	7·0	—	1·5	11·0	1·5	10·5	1·5	1·0	0·5	2·5	—
7·6	7·47	2·43	12th	13	—	—	2·0	—	5·0	18·0	—	1·0	13·5	4·5	8·5	1·5	1·0	0·5	0·5	—
6·5	4·90	1·90	17th	10	—	—	6·0	—	1·0	—	9·0	1·5	9·0	5·0	11·0	0·5	3·0	—	—	—
6·0	5·89	1·20	18th	16	—	—	7·0	—	1·0	7·0	—	—	8·0	6·0	11·5	3·5	2·0	—	—	—
7·0	6·04	1·36	29th	21	—	—	—	—	2·5	15·0	0·5	1·5	8·5	8·5	5·5	2·0	1·5	0·5	3·0	—
6·1	7·84	1·98	5th	20	—	—	1·0	—	2·0	7·5	—	0·5	15·0	1·5	3·5	5·5	1·5	1·5	1·0	—
5·6	3·87	·86	3rd	10	—	—	8·5	—	7·0	6·5	—	2·0	12·0	3·0	5·5	5·5	0·5	1·0	1·5	—
5·1	1·51	·41	15th	12	—	—	—	—	6·0	5·0	—	1·5	2·5	9·0	11·0	3·5	0·5	0·5	1·5	—
5·5	0·88	·82	6th	2	—	—	1·0	—	6·0	7·5	—	3·5	7·0	0·5	4·0	4·0	4·0	—	8·0	—
5·9	42·51	2·43	12th May	129	—	—	17·5	—	53·5	98·5	9·5	18·5	112·5	42·0	192·5	37·0	21·5	6·0	26·0	—

Long. 64° 47′ W. Height of Barometer Cistern above Sea, 151 feet.

7·1	3·65	·77	18th	19	—	—	—	—	1·5	8	—	2	7	0·5	7	2·5	6	1	2	3
7·8	4·61	1·17	19th	15	—	—	—	—	—	8·5	—	4	9·5	0·5	1	—	10	—	3	1
7·3	3·09	1·05	30th	8	—	—	—	—	2	9·5	—	2	3	—	3	—	11	1	10	1
3·4	0·77	0·38	10th	4	—	—	—	—	1	7	—	2	7	—	—	—	10	1	5	5
								—												
5·6	2·4	0·93	29th	6	—	—	—	—	4	7	—	1	—	1	4	5	15	4	1	—
6·0	4·47	0·98	30th	20	—	—	1	—	2	8	2	2	3	1	10	2	6	5	2	—
5·5	1·66	0·33	27th	12	—	—	—	—	—	—	—	1·0	3·0	4·0	4·0	—	14·0	3·0	1·0	—
7·0	5·14	1·75	11th	16	—	—	—	—	5·0	16·0	—	5·0	9·0	1·0	7·0	—	2·0	1·0	6·0	—
7·0	4·58	2·50	17th	13	—	—	—	—	—	2·0	—	1·0	6·0	3·0	4·0	1·0	13·0	1·0	1·0	—
6·0	4·28	0·65	18th	11	—	—	—	—	17·0	3·0	—	—	1·3	—	1·0	1·0	13·0	5·0	10·0	—
5·2	34·29	2·50	17th Nov.	124	—	—	1	—	32·5	68·0	2	20·0	48·5	11·0	41·0	11·5	100·0	22·0	41·0	10·0

Long. 105° 31′ E. Height of Barometer Cistern above Sea, 110 feet.

4·0	7·0	2·06	15th	14	—	—	3	—	17	14	—	2	1·5	7·5	3	2	5·5	8·5	1	—
3·5	10·14	2·30	22nd	7	—	—	7	—	22	7	—	3	7	6	2	0·5	4	5	1·5	—
4·0	8·57	1·84	21st	20	—	—	8	—	11	20	—	2·5	4	3·5	2	1	5	12	1	—
3·5	11·26	2·54	18th	14	—	—	4	—	18	12	—	2·5	2	2·5	3	2·5	4	11	2·5	—
3·5	6·41	1·93	20th	16	—	—	9	—	23	8	—	—	—	2·5	3·5	3	8·5	12	1·5	—
3·5	5·46	1·14	14th	11	—	—	5	—	19	11	—	0·5	1	2·5	6	3·5	8·5	7·5	0·5	—
3·5	6·53	1·85	18th	11	—	—	5	—	19	12	—	0·5	0·5	2·5	4	3	6·5	11	3	—
4·0	7·21	1·34	5th	15	—	—	6	—	12	19	—	1·5	—	2·5	4·0	2·5	7·5	12·5	0·5	—
4·0	8·0	1·14	4th	20	—	—	5	—	13	17	—	—	—	1·0	1·5	4·0	6·0	16·0	1·5	—
3·5	4·04	·82	30th	13	—	—	6	—	17	16	—	—	—	—	0·5	4·5	3·0	20·0	3·0	—
4·5	15·42	2·85	12th	23	—	—	9	—	8	22	—	8·0	—	0·5	—	6·5	—	15·0	—	—
—	7·65	1·52	26th	17	—	—	7	—	11	20	—	5·0	—	—	—	3·5	—	22·5	—	—
3·4	97·69	2·85	30th Oct.	181	—	—	74	—	190	172	—	32·5	16·0	31·0	29·5	36·5	58·5	153·0	16·0	—

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Appendix

Annual Abstract of Meteorological Observations taken

HONG KONG, CHINA. Lat. 22° 16′ 20″ N.

Month.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Hourly Means. 9 p.m.	Daily Means. Simple.	Daily Means. Reduced.	Means of. Min.	Means of. Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Minimum.	Relative Humidity. Day.
January - -	30·156	59·6	—	—	—	54·4	63·4	44·6	27th	71·0	9th	·362	73·5	51·2	6 & 22
February -	30·062	62·2	—	—	—	57·1	62·8	50·0	22nd	69·8	3rd	·456	88·6	73·0	3rd
March - -	30·888	64·9	—	—	—	60·4	70·9	51·5	3rd	83·2	19th	·504	78·0	53·5	6th
April - -	29·989	69·6	—	—	—	66·1	75·0	60·3	23rd	85·2	28th	·641	83·5	58·8	4th
May - -	29·845	77·2	—	—	—	74·4	82·0	67·0	2nd	88·9	13th	·906	90·6	84·0	7th
June - -	29·758	80·7	—	—	—	77·2	86·0	73·5	12&22	95·0	19th	·911	83·5	66·5	26th
July - -	29·688	81·9	—	—	—	78·8	88·1	76·0	11&27	92·0	5 & 16	·909	80·1	63·5	7th
August - -	29·711	81·7	—	—	—	78·6	87·6	75·0	17th	93·0	23rd	·946	82·5	69·0	29th
September -	29·756	81·4	—	—	—	77·6	87·2	69·5	28th	94·5	14th	·890	78·8	71·6	16th
October - -	29·944	77·0	—	—	—	74·0	82·8	69·5	20th	89·0	3rd	·725	79·5	61·7	24th
November -	30·155	68·0	—	—	—	63·0	73·8	57·0	14th	81·0	3 & 6	·474	65·6	46·9	29th
December -	30·219	63·0	—	—	—	56·4	65·0	46·0	28th	75·0	3rd	·419	79·1	38·6	28th
Mean -	30·014	70·6	—	—	—	68·1	77·5	44·6	27th Jan.	95·0	19th June	·680	80·27	38·6	28th Dec.

Summary of Results of Meteorological Observations taken

Stations, with their Height above the sea.	Mean Pressure.	Air Temperature. Hourly Means. 9 a.m.	Means of Min.	Means of Max.	Abs. Min. Temp.	Abs. Min. Day.	Abs. Max. Temp.	Abs. Max. Day.	Tension of Vapour.	Relative Humidity. Mean.	Relative Humidity. Min.	Relative Humidity. Day.	Mean amount of Cloud.
Mediterranean:	ft.												
Gibraltar - -	53	30·075	64·07	57·62	71·96	42·5	3 Jan.	98·8	1 Aug.	·517	83·3	48·0	11 Feb.	3·91
Malta - - -	70	30·013	68·9	62·6	71·8	40·4	15 Jan.	96·4	27 July	·527	71·9	36·0	24 Aug.	2·8
Scutari - - -	60	29·995	58·7	47·2	66·4	16·5	14 Mar.	103·4	2 Aug.	·388	74·7	32·0	3 Aug.	5·1
African:														
Natal, "Fort Napier"	2,200	29·956	64·8	53·8	78·1	37·2	23 June	110·8	23 Jan.	·423	58·0	25·0	22 May &16Aug.	4·05
Sierra Leone - -	224	29·881	79·7	67·9	82·7	62·0	5 July	98·0	28 May & 4June	·973	84·9	64·1	24 April	3·4
American & West Indies:														
Barbados - -	30	30·265	81·5	67·7	85·2	69·0	25 Jan.	92·5	14 Nov.	·747	67·7	48·0	12 Mar.	4·0
Newcastle, Jamaica* -	3,800	30·179	64·7	52·6	72·6	45·0	20 Jan.	85·3	12 June	·514	57·2	46·9	28 Feb.	4·1
Up Park Camp† „ -	235	29·979	76·39	64·38	75·49	50·0	15 Jan.	99·6	18 Feb.	·682	62·76	38·0	30 Nov.	3·46
Nassau, Bahamas -	44	30·053	79·8	69·9	83·9	55·2	28 Dec.	99·0	24 July	·706	69·8	43·5	30 Mar.	5·9
Bermuda‡ - -	151	30·123	71·6	59·9	76·8	47·2	14 April	95·5	8 Aug.	·637	76·3	50·0	4 April	5·2
Singapore - -	110	29·267	80·3	69·3	92·6	67·0	13 Mar.	96·8	25 May	·896	79·1	67·0	13 Mar.	3·4
Hong Kong - -	43	30·014	70·6	68·1	77·5	44·6	27 Jan.	95·0	19 June	·680	80·27	38·6	28 Dec.	6·0

* Newcastle, Jamaica. No records for September and October; instruments broken by hurricane on 18th August. No
† Up Park Camp, Jamaica. No records for March. No observations of wind recorded from March to June inclusive.
‡ Bermuda. Mean of 10 months; no observations taken in May and June.

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No. XIII.—*continued.*

at Netley and Foreign Stations in the Year 1880.

Long. 114° 9′ 16″ E. Height of Barometer Cistern above Sea, 18 feet.

Mean Amount of Cloud.	Rainfall. Total.	Rainfall. Max.	Rainfall. Day.	Weather. Number of Days of: Rain.	Snow.	Hail.	Thunder Storm.	Fog.	Clear Sky.	Overcast.	Gales.	Wind. Number of Observations under each Point: N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
6·9	2·38	·95	25th	10	—	—	—	—	9·5	18·0	—	1·5	10·0	6·5	—	—	—	2·5	4·0	6·5
9·4	1·91	·46	15th	17	—	—	1·0	—	5·0	26·5	—	2·0	4·5	14·0	—	—	—	1·0	4·5	3·0
4·2	0·24	·17	1st	4	—	—	—	—	18·5	7·0	—	—	11·5	10·5	—	—	1·0	1·5	0·5	6·0
6·7	3·62	1·25	28th	11	—	—	—	—	8·0	15·0	—	—	11·0	8·0	2·0	—	—	0·5	2·0	6·5
8·0	15·58	2·76	18th	18	—	—	—	—	7·0	6·0	—	1·0	14·0	4·0	2·0	—	1·0	2·0	—	7·0
8·1	27·85	3·00	7th	20	—	—	2·0	—	—	2·0	—	1·0	6·0	6·0	4·0	—	11·0	—	—	2·0
4·6	12·03	1·60	11th	20	—	—	—	—	5·5	13·5	—	—	3·5	5·0	6·5	1·0	9·0	—	—	6·0
6·0	11·56	2·25	16th	14	—	—	1·0	—	5·5	3·0	—	—	1·0	6·5	0·5	4·0	8·5	1·0	—	9·5
6·4	17·16	5·5	17th	16	—	—	—	—	8·0	7·5	4	1·5	5·5	9·5	7·5	—	—	—	—	6·0
4·7	15·6	6·4	15th	11	—	—	0·5	—	12·5	4·5	3	5·0	5·5	14·0	—	0·5	0·5	0·5	1·5	3·5
1·4	—	—	—	—	—	—	—	—	25·5	1·5	—	2·5	7·0	11·5	1·5	0·5	—	1·0	—	6·0
5·6	1·14	0·38	7 & 16	4	—	—	—	—	13·0	13·5	—	4·0	5·0	16·5	—	—	—	0·5	1·0	4·0
6·0	109·07	6·4	15th Oct.	145	—	—	4·5	—	118·0	118·0	7	18·5	84·5	112·0	24·0	6·0	31·0	10·5	13·5	66·0

at Foreign Stations in the Year 1880.

Rainfall. Total.	Rainfall. Max.	Rainfall. Day.	Weather. Number of days of: Rain.	Snow.	Hail.	Thunder-storm.	Fog.	Clear sky.	Overcast.	Gales.	Wind. No. of Observations under each Point: N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.	Latitude.	Longitude.
																				° ′ ″	° ′ ″
29·85	2·33	24 Jan.	80	—	—	·5	·5	171·5	75·5	2·0	18·5	55·5	80·0	3·5	1·0	84·5	72·5	32·0	3·0	36 6 20 N.	5 20 53 W.
19·12	2·03	27 Sept.	66	—	1	12·0	—	210·0	71·0	10·0	35·0	80·0	33·0	60·0	15·0	27·0	33·0	83·0	—	35 53 49 N.	14 30 54 E.
22·33	2·44	21 June	90	32	1	23·0	40	144·5	133·0	1·0	43·0	102·0	29·0	4·5	46·5	68·5	11·0	4·0	27·0	41 0 0 N.	29 3 0 E.
30·58	5·58	16 Feb.	99	—	2	46·0	—	214·0	157·0	—	16·5	159·5	39·5	32·0	7·5	12·5	23·0	16·5	3·5	29 3 0 S.	30 2 0 E.
179·14	7·07	17 Sept.	151	—	—	62·0	—	183·0	—	—	23·5	56·0	41·5	27·5	36·0	40·5	61·5	41·0	37·5	8 29 30 N.	13 9 7 W.
60·77	2·54	15 Aug.	215	—	—	—	—	231·0	52·0	—	3·5	322·0	10·0	22·0	—	—	—	5·5	—	13 4 30 N.	59 40 83 W.
63·71	7·5	28 July	95	—	—	7·0	—	131·0	75·7	26·5	2·5	3·5	63·0	50·0	19·0	16·5	—	—	27·5	18 62 0 N.	76 42 0 W.
30·02	3·67	18 Aug.	70	—	—	23·0	—	158·0	55·5	1·0	30·5	11·0	13·5	43·5	2·5	1·0	2·0	—	5·0	17 59 0 N.	76 56 0 W.
42·51	2·43	12 May	129	—	—	17·5	—	53·5	98·5	9·5	18·5	112·5	42·0	192·5	37·0	21·5	6·0	26·0	—	25 5 0 N.	77 21 0 W.
34·29	2·50	17 Nov.	124	—	—	1·0	—	32·5	68·0	2·0	20·0	48·5	11·0	41·0	11·5	100·0	22·0	41·0	10·0	32 17 43 N.	64 47 0 W.
97·69	2·85	30 Oct.	181	—	—	74·0	—	190·0	172·0	—	32·5	16·0	31·0	29·5	36·5	58·5	153·0	16·0	—	1 16 0 N.	105 31 0 E.
109·07	6·4	15 Oct.	145	—	—	4·5	—	118·0	118·0	7·0	18·5	84·5	112·0	24·0	6·0	31·0	10·5	13·5	66·0	22 16 20 N.	114 9 16 E.

observations of wind after June.
and September to December; anemometer under repair.

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APPENDIX No. XIV.

TABLE showing the AVERAGE STRENGTH of the TROOPS at each of the PRINCIPAL STATIONS in the UNITED KINGDOM, with the ADMISSIONS into HOSPITALS for PRIMARY VENEREAL SORES, SECONDARY SYPHILIS, and GONORRHŒA respectively in each year from 1860 to 1880 inclusive.

Stations.	1860.				1861.				1862.				1863.				1864.			
	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.
Devonport and Plymouth	3,825	609	125	684	3,537	703	161	623	3,426	500	152	497	2,782	344	143	354	2,481	274	52	287
Portsmouth	5,710	1,073	260	1,057	5,107	851	188	1,041	4,691	608	222	839	4,630	497	246	669	4,436	538	261	578
Chatham, Sheerness, and Gravesend	5,647	601	157	919	4,609	470	263	622	3,634	327	276	511	3,899	366	121	590	3,804	334	163	554
Woolwich	6,877	1,280	470	1,065	5,967	823	299	894	5,887	781	224	878	5,234	500	183	641	4,824	384	122	417
Aldershot	15,164	1,939	485	1,681	12,898	1,804	451	1,362	12,078	1,400	478	1,548	11,746	1,297	487	1,116	10,700	1,129	504	1,301
Windsor	*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Shorncliffe	3,631	476	136	386	3,758	459	88	434	3,589	234	86	389	2,905	236	67	328	2,530	208	96	231
Colchester	2,609	440	68	451	2,135	286	62	350	1,479	233	62	247	1,850	241	102	289	2,089	247	72	370
Winchester	1,449	176	47	293	1,186	118	47	198	674	107	19	133	621	63	20	88	647	72	21	117
Dover	2,405	365	94	306	2,339	352	60	432	2,054	212	69	299	2,188	215	51	325	2,214	199	42	206
Canterbury	1,880	155	47	237	1,593	227	65	254	1,124	119	74	247	1,079	147	68	209	1,178	80	41	204
Maidstone	492	52	13	59	412	14	12	39	271	6	7	17	299	24	4	24	216	8	14	9
Cork	1,848	222	49	205	1,835	217	52	248	1,408	153	29	131	1,126	108	63	92	1,070	81	38	111
Curragh	5,942	1,017	221	623	5,962	853	329	636	5,007	544	176	547	5,060	615	219	477	4,505	581	205	418
Total	57,479	8,405	2,172	7,966	51,338	7,267	2,077	7,133	45,322	5,224	1,974	6,283	43,419	4,653	1,774	5,202	40,694	4,135	1,631	4,803
Isle of Wight	1,245	111	32	163	1,164	100	40	135	800	86	17	134	1,037	50	38	125	1,118	83	35	162
London	*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Warley	No returns.				336	30	27	34	823	62	38	116	692	88	36	135	581	30	24	97
Hounslow	386	46	28	37	367	49	13	30	547	52	13	9	513	45	13	26	536	24	16	12
Pembroke Dock	1,315	92	26	125	1,262	87	30	147	750	36	27	73	819	43	22	75	805	52	29	84
Sheffield	509	85	9	67	632	61	16	63	573	76	25	70	626	47	29	46	567	31	6	48
Manchester	1,168	135	17	130	1,118	258	13	210	1,051	185	45	192	1,031	96	70	117	962	100	66	91
Preston	944	126	15	190	1,068	88	20	82	710	38	31	134	698	39	67	96	855	85	12	196
Edinburgh	1,471	173	37	197	1,496	145	22	176	1,409	98	49	207	1,303	138	35	176	1,128	74	24	110
Fermoy	1,666	172	19	173	1,820	117	18	145	1,204	43	30	83	1,355	87	35	122	1,425	49	29	102
Limerick	1,257	154	11	229	1,246	150	30	157	1,064	148	27	146	910	146	18	68	783	101	25	71
Athlone	922	81	19	201	717	100	39	82	810	41	27	90	876	38	18	112	738	107	46	93
Dublin	5,423	1,009	239	708	4,899	706	235	566	4,645	577	165	715	4,622	741	196	647	4,607	825	211	494
Belfast	812	108	28	154	1,001	158	30	196	640	58	23	101	650	54	37	71	789	86	23	76
London & Windsor combined	5,782*	766	164	297	5,757	839	214	290	4,755	621	174	367	4,987	745	193	301	5,063	808	183	389
Total	22,900	3,058	644	2,671	22,883	2,888	747	2,322	19,781	2,121	691	2,437	20,119	2,357	807	2,177	19,987	2,455	720	2,025

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Stations.	1865.				1866.				1867.				1868.				1869.			
	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.
Devonport and Plymouth	2,569	342	70	377	2,556	209	76	432	2,443	185	57	434	2,418	159	87	359	2,199	162	45	274
Portsmouth - -	4,824	545	175	662	4,510	452	157	747	4,351	504	148	782	4,928	422	133	925	4,668	289	103	586
Chatham, Sheerness, and Gravesend - -	4,188	360	132	584	3,095	259	142	497	4,481	317	189	587	4,489	284	127	699	4,024	163	100	457
Woolwich - - -	4,795	363	107	394	4,607	410	106	385	4,892	432	128	563	5,003	233	122	474	5,261	271	112	465
Aldershot - - -	11,049	1,108	390	1,235	9,211	742	265	815	7,894	638	255	784	9,879	760	283	992	10,598	668	331	1,103
Windsor - - -	—	—	—	—	—	—	—	—	1,074	62	—	60	1,053	143	—	66	1,035	96	20	84
Shorncliffe - - -	2,744	187	103	265	2,404	137	50	267	2,616	111	65	326	2,554	197	112	314	2,687	163	53	271
Colchester - - -	2,366	254	82	398	2,255	389	65	422	2,378	346	80	538	2,059	374	116	440	1,883	160	53	273
Winchester - -	978	71	20	202	928	43	28	137	902	47	47	116	882	92	43	152	794	80	21	104
Dover - - -	2,387	160	46	174	2,078	186	29	217	2,014	267	96	275	2,366	262	92	428	2,433	195	100	252
Canterbury - - -	1,000	77	24	100	931	109	45	122	981	116	23	173	1,148	131	44	241	956	43	31	130
Maidstone - - -	344	61	12	68	375	52	12	55	384	93	13	108	433	53	10	98	443	57	13	117
Cork - - - -	1,423	122	45	126	1,768	87	37	112	1,570	113	27	119	1,448	88	41	117	1,624	119	34	131
Curragh - - -	4,411	427	138	352	4,758	369	126	365	3,931	409	122	409	3,935	335	169	380	3,412	209	75	219
Total - -	43,078	4,077	1,344	4,937	39,476	3,444	1,138	4,573	39,911	3,640	1,250	5,274	42,595	3,533	1,319	5,085	42,017	2,765	1,091	4,466
Isle of Wight - -	1,210	39	23	199	1,220	14	16	241	1,105	65	43	182	976	101	53	145	998	129	60	185
London - - -	—	—	—	—	—	—	—	—	4,380	715	—	330	4,353	645	—	326	4,155	597	142	271
Warley - - -	619	60	7	119	1,020	81	15	211	1,223	91	11	268	824	76	14	149	661	40	26	52
Hounslow - - -	514	12	9	16	524	11	16	39	498	31	16	48	416	44	29	34	483	41	12	41
Pembroke Dock - -	419	35	9	24	748	23	4	39	968	27	9	93	1,242	44	18	104	1,035	53	3	66
Sheffield - - -	703	66	31	89	595	63	26	75	800	130	23	227	801	86	26	152	644	94	17	93
Manchester - - -	940	119	54	142	813	75	36	120	1,021	181	28	244	1,142	132	62	129	914	146	49	100
Preston - - -	1,033	88	28	214	847	64	15	109	1,065	93	35	192	883	77	47	161	874	150	45	178
Edinburgh - - -	1,175	132	16	155	1,059	61	16	86	1,024	65	22	132	1,118	51	17	91	1,055	63	18	87
Fermoy - - -	888	39	14	40	844	30	26	53	1,077	75	14	101	867	41	15	87	872	101	19	70
Limerick - - -	813	58	21	143	767	37	16	42	855	100	14	91	899	103	27	103	755	41	9	36
Athlone - - -	439	68	20	37	576	24	26	31	679	58	12	70	548	21	13	53	553	23	6	62
Dublin - - -	4,397	659	169	626	4,986	627	157	566	5,373	695	193	656	4,898	680	201	579	4,294	772	213	549
Belfast - - -	941	43	23	164	596	44	17	51	516	46	19	36	519	29	3	123	446	23	3	60
London & Windsor combined	5,391	738	162	387	5,240	791	117	322	—	—	110	—	—	—	193	—	—	—	—	—
Total - -	19,482	2,156	586	2,355	19,835	1,945	503	1,985	20,589	2,372	549	2,670	19,486	2,130	718	2,236	17,739	2,273	622	1,856

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Stations.	1870.				1871.				1872.				1873.				1874.			
	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.
Devonport and Plymouth	2,208	85	29	262	3,200	159	49	614	2,748	161	73	421	3,036	112	59	289	2,936	108	67	185
Portsmouth - -	4,548	232	101	564	5,656	231	88	794	6,065	241	138	724	5,721	250	104	564	6,003	287	97	398
Chatham, Sheerness, and Gravesend - -	4,115	192	74	434	4,719	309	79	659	4,674	228	78	414	4,202	172	86	334	4,257	140	90	259
Woolwich - - -	5,569	241	88	547	5,814	336	63	754	6,257	373	87	869	6,213	370	151	600	6,206	293	155	419
Aldershot - - -	11,235	757	370	1,063	15,493	1,011	298	1,706	12,741	795	324	1,332	11,821	852	291	1,068	12,922	695	307	900
Windsor - - -	1,070	72	16	53	1,046	81	12	55	1,035	93	14	61	1,089	92	36	58	1,037	65	34	42
Shorncliffe - - -	2,145	80	47	157	2,938	87	44	245	2,738	91	60	144	2,238	47	44	136	2,438	35	64	109
Colchester - - -	1,677	70	28	214	2,331	74	74	249	2,124	117	59	306	1,873	78	32	161	1,685	34	44	106
Winchester - - -	441	27	9	27	752	22	20	75	837	48	47	55	679	18	20	46	994	38	10	63
Dover - - -	2,477	75	64	223	2,759	70	40	238	2,691	127	23	203	2,365	91	27	149	2,381	87	36	164
Canterbury - - -	732	111	26	129	985	37	20	243	891	38	16	129	1,015	20	24	106	987	36	36	63
Maidstone - - -	205	14	10	35	338	15	8	19	331	19	3	51	272	16	3	33	212	14	7	11
Cork - - - -	1,885	129	46	149	2,345	129	37	213	2,595	161	57	218	2,525	153	47	168	2,116	54	28	85
Curragh - - -	3,273	183	88	224	5,714	202	100	390	5,067	254	66	363	4,990	149	45	234	3,962	182	99	164
Total - -	41,580	2,268	996	4,081	54,090	2,763	932	6,254	50,794	2,752	1,045	5,290	48,039	2,420	969	3,946	48,136	2,039	1,074	2,908
Isle of Wight - -	806	52	11	94	1,147	76	28	147	1,190	68	71	102	1,128	42	52	75	1,206	107	63	142
London - - -	4,294	689	97	283	4,282	657	125	363	4,708	937	219	356	4,278	790	200	381	3,986	716	177	412
Warley - - -	600	33	15	68	1,073	61	22	127	711	47	26	81	953	21	7	77	941	30	23	73
Hounslow - - -	536	47	17	47	753	34	23	41	667	60	13	50	631	42	6	43	663	45	5	34
Pembroke Dock - -	772	42	18	89	1,057	30	24	98	935	25	28	51	1,282	32	54	61	1,359	29	72	69
Sheffield - - -	689	53	12	90	730	92	21	153	837	82	31	154	732	52	32	110	801	39	22	73
Manchester - - -	1,084	100	54	144	1,133	79	30	145	944	92	12	133	1,028	94	21	115	1,058	112	20	96
Preston - - -	558	75	16	83	916	69	30	130	874	100	27	114	834	103	17	151	672	65	46	85
Edinburgh - - -	1,056	105	35	124	1,106	76	33	98	1,092	46	48	116	1,154	51	28	75	1,253	31	38	56
Fermoy - - -	1,271	110	50	65	1,230	41	9	46	1,128	63	13	79	967	20	8	37	768	8	8	14
Limerick - - -	722	98	23	57	742	42	39	76	802	80	16	63	882	69	28	84	829	48	9	22
Athlone - - -	482	21	9	57	493	23	10	37	720	10	7	29	637	9	6	13	592	5	4	14
Dublin - - -	4,495	576	193	452	4,638	545	184	575	4,914	813	161	737	4,608	629	160	569	3,946	375	138	289
Belfast - - -	487	21	5	70	657	40	14	101	438	34	12	48	687	71	13	97	796	51	19	71
Total - -	17,852	2,022	555	1,723	19,957	1,865	592	2,137	19,950	2,457	684	2,113	19,801	2,025	632	1,888	18,879	1,661	644	1,450

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Stations.	1875.				1876.				1877.				1878.				1879.				1880.			
	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.	Strength.	Primary Venereal Sores.	Secondary Syphilis.	Gonorrhœa.
Devonport and Plymouth -	2,575	75	64	157	2,658	71	58	247	2,934	83	71	239	3,227	111	53	322	2,210	74	39	195	2,492	132	71	412
Portsmouth -	5,556	169	128	384	5,502	151	143	385	4,575	124	94	335	5,733	84	119	372	4,127	110	72	230	4,456	338	110	537
Chatham, Sheerness, and Gravesend -	4,512	75	106	226	4,588	151	117	282	5,080	219	88	429	5,734	280	130	586	4,133	209	104	326	4,031	250	86	397
Woolwich -	5,695	330	210	392	5,783	241	178	470	6,246	179	213	395	6,455	244	318	506	5,320	284	310	274	5,398	380	472	423
Aldershot -	12,814	600	289	814	12,055	563	322	901	11,116	657	282	978	13,775	730	253	1,156	11,019	622	210	964	11,068	853	194	1,172
Windsor -	972	40	67	43	956	39	24	78	1,020	82	24	77	1,096	43	44	80	1,023	47	39	72	989	105	66	78
Shorncliffe -	2,625	48	53	80	2,748	60	47	115	2,302	62	68	117	3,314	136	90	143	2,359	159	72	121	2,469	215	57	140
Colchester -	2,218	72	53	180	2,631	80	22	190	2,502	79	42	158	2,803	53	32	262	1,964	73	57	81	2,145	93	53	196
Winchester -	957	26	10	66	983	20	16	85	1,004	18	15	110	1,129	43	21	124	1,049	24	33	66	895	39	11	76
Dover -	2,300	63	43	118	2,478	75	63	112	3,225	62	32	178	3,244	102	32	203	2,561	93	78	145	2,286	113	38	192
Canterbury -	1,138	14	39	76	1,408	38	19	80	1,378	26	15	107	1,460	40	13	83	1,211	41	18	83	1,224	92	18	99
Maidstone -	138	1	2	5	108	3	4	2	119	4	1	8	146	1	1	11	156	3	3	3	269	9	3	27
Cork -	2,489	57	41	101	2,520	54	42	150	2,437	39	19	90	2,439	88	32	107	2,275	67	36	106	1,955	140	36	168
Curragh -	4,258	147	90	183	4,112	76	66	205	4,554	175	96	321	5,218	280	84	337	3,257	249	65	213	4,380	541	116	470
Total -	48,606	1,717	1,195	2,825	48,620	1,622	1,121	3,302	52,122	1,809	1,060	3,551	55,813	2,235	1,222	4,362	42,646	2,005	1,136	2,939	44,026	3,280	1,331	4,387
Isle of Wight -	1,222	109	73	68	1,139	61	37	73	1,092	56	43	95	1,311	66	56	70	887	50	20	45	1,013	70	12	78
London -	8,847	730	185	873	8,735	545	170	366	8,079	690	170	538	9,240	1,060	262	640	9,254	743	182	491	9,445	1,001	223	625
Warley -	819	30	11	70	824	42	13	79	1,120	67	11	138	722	101	19	116	440	53	20	24	479	32	14	81
Hounslow -	660	16	6	29	666	50	8	39	621	30	16	39	774	81	22	48	751	14	14	18	873	102	12	63
Pembroke Dock -	1,218	38	38	43	972	28	28	47	863	14	8	56	963	12	3	44	802	13	6	36	721	46	21	64
Sheffield -	779	68	23	71	812	97	21	72	881	56	30	90	840	81	29	137	659	91	44	139	664	102	37	88
Manchester -	1,068	95	50	115	1,063	120	45	162	1,198	157	69	214	1,199	246	42	212	825	169	39	100	943	219	66	170
Preston -	749	43	71	54	819	63	77	86	848	65	71	98	965	70	55	141	666	38	63	70	716	70	22	159
Edinburgh -	1,222	33	13	85	1,165	103	18	86	1,122	65	43	74	1,306	98	50	137	1,188	95	53	131	1,112	83	48	132
Fermoy -	1,200	15	17	30	1,182	37	36	76	886	26	23	42	694	18	24	62	811	57	12	68	513	48	11	33
Limerick -	963	23	13	29	802	38	14	41	846	63	11	79	918	78	30	96	765	21	18	46	763	47	16	88
Athlone -	818	8	22	13	693	5	23	30	709	25	24	41	760	22	38	54	647	10	9	34	655	32	8	35
Dublin -	4,247	311	276	370	4,062	310	224	459	4,131	425	156	574	5,067	779	238	630	4,477	523	190	422	4,357	940	140	605
Belfast -	751	33	19	46	956	55	11	61	772	33	18	96	924	61	5	113	776	96	21	86	800	218	38	124
Total -	19,973	1,552	817	1,405	19,790	1,554	745	1,677	19,076	1,730	693	2,234	20,749	2,723	873	2,508	18,058	1,948	691	1,719	18,054	3,010	668	2,305

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APPENDIX No. XV.

THE PARKES' MEMORIAL PRIZE.

Surgeon-General T. LONGMORE, C.B., *President of Committee.*
Professor F. S. B. F. DE CHAUMONT, *Treasurer.*
Surgeon-Major G. E. DOBSON, *Secretary.*

The subject for the next prize is the following :—

"ON THE EFFECT OF HYGIENIC MEASURES IN ARRESTING THE SPREAD OF CHOLERA."

The Prize is One Hundred Pounds in Money and a Gold Medal value Fifteen Guineas.

The Competition is open to the Medical Officers of the Army, Navy, and Indian Services of Executive Rank on full pay, with the exception of the Assistant Professors of the Army Medical School during their term of Office. Essays to be sent in to the Committee of the "Parkes' Memorial Fund," care of the Director-General, Army Medical Department, 6, Whitehall Yard, London, S.W., on or before the 1st day of June 1882. Each Essay to have a Motto, and to be accompanied with a sealed envelope bearing the same Motto and containing the name of the Competitor.

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